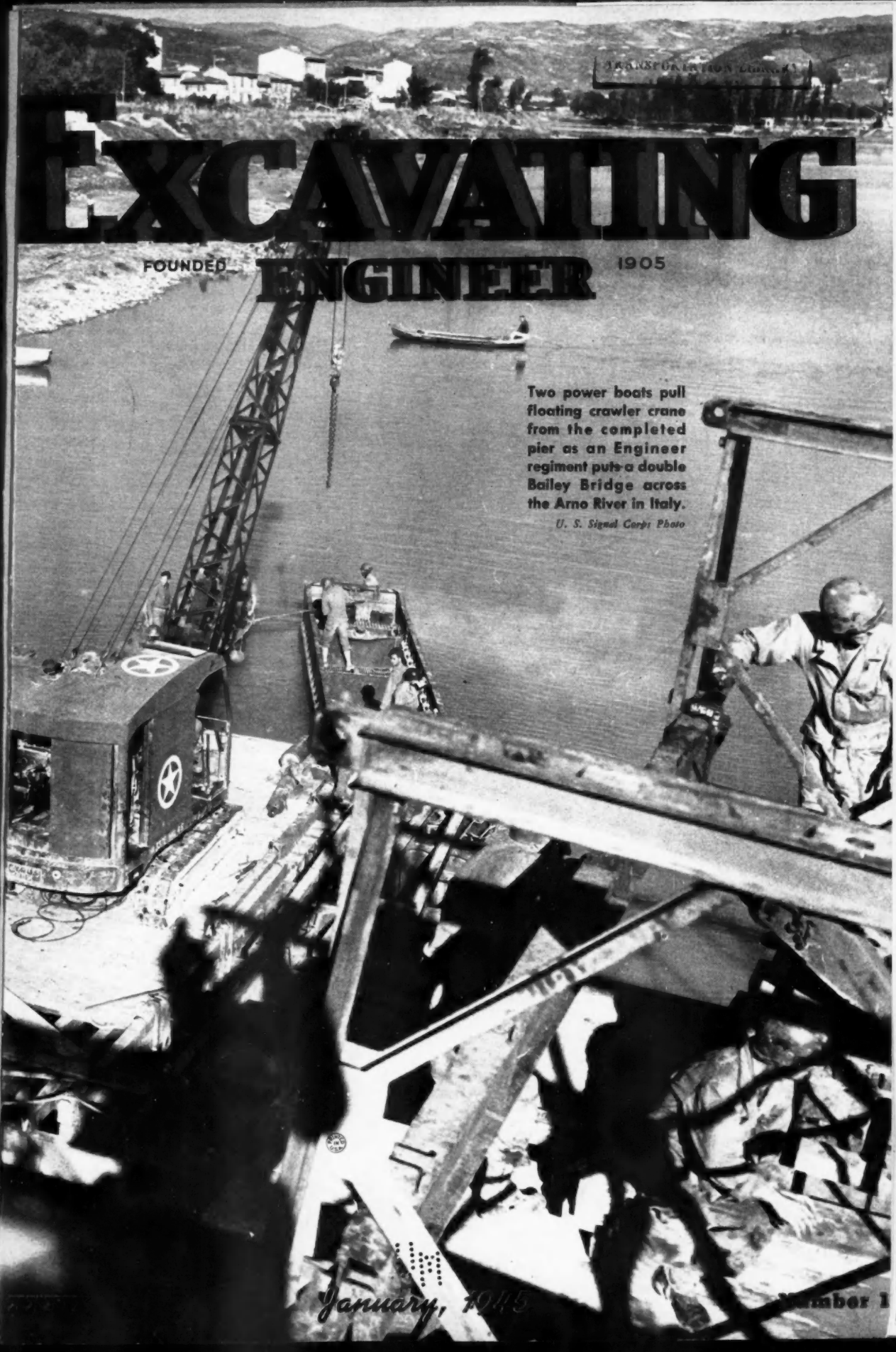
EXCAVATING ENGINEER

FOUNDED 1905



Two power boats pull floating crawler crane from the completed pier as an Engineer regiment puts a double Bailey Bridge across the Arno River in Italy.

U. S. Signal Corps Photo

January, 1945 ... Number 1

Laurels by the Yard

Just as vital to winning the war—though less dramatic than the war-front achievements of Bucyrus-Erie excavators—is the steady, high-production performance they deliver at home. With their "years ahead" reputation and their ability to handle both stripping and loading at lowest cost per yard, the Bucyrus-Eries at home are winning war laurels too — helping quarry and mine operators maintain the high speed output that's so important today!

V-78-C

SO. MILWAUKEE BUCYRUS ERIE WISCONSIN

EXCAVATING ENGINEER

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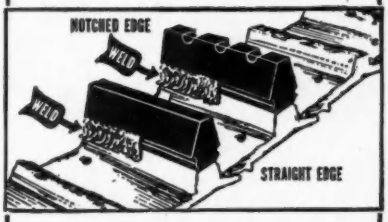
Rebuild your TRACTOR GROUSERS WITH BULLDOG Grip-Lugs



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Awarded the Gold Medal for Safety
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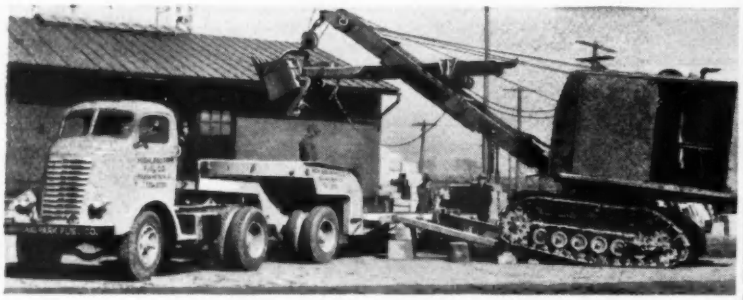
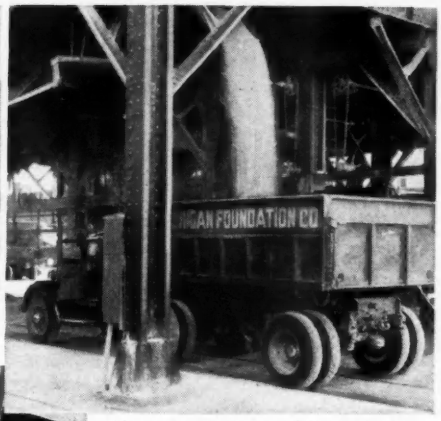


Fruehauf Carryalls—are built to "Take it." They make light work of heavy hauling regardless of the size of the job.



Above—Fruehauf Gravel Dump Models —handle deliveries with speed and economy for the operator.

Left—Hopper Trailer "Trains"—speed construction work and cut costs.

Crushed Stone Dumps—provide rugged construction to handle heavy loads.

Specially designed for tar-asphalt hauling—but used for general dump and construction work.

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World's Largest Builders of Truck-Trailers

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Ready-Mix Trailer — engineered to transport concrete direct to the road-building job.

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IRON AND STEEL DIVISION
LATHAM SQUARE BUILDING
OAKLAND, CALIFORNIA

November 10, 1944

Mr. W. H. Richardson
General Manager, Western Division
The Timken Roller Bearing Company
1800 Van Ness Avenue,
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Gentlemen:

With the successful completion of Shasta Dam and the cessation of The Columbia Construction Company's 9⅞ mile conveyor belt we feel your company to be deserving of a note of appreciation.

This belt, equipped with anti-friction troughing rolls that utilized some 70,000 Timken tapered roller bearings economically hauled the amazing total of almost 13 million tons of sand and gravel! -- and with an absolute minimum of repair and maintenance cost.

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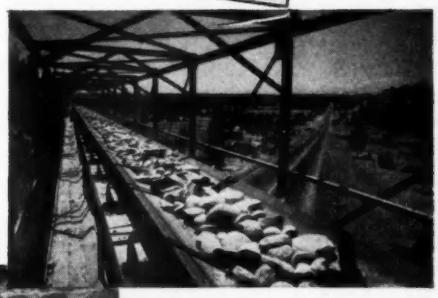
Yours truly,

THE COLUMBIA CONSTRUCTION COMPANY, INC.

Henry J. Kaiser
President

HJK:vmcd

THE COLUMBIA CONSTRUCTION COMPANY REPORTS ON TIMKEN BEARINGS AT SHASTA DAM



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TAPERED ROLLER BEARINGS

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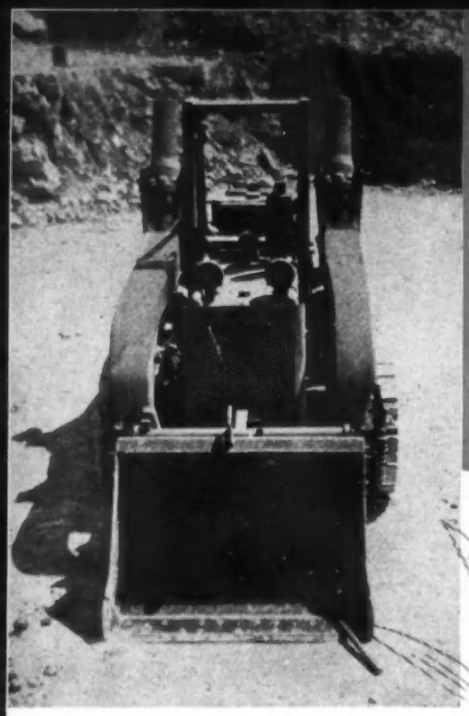


Helping Iowa Corn GROW TALL

E. Groenendyk & Sons Lime Quarry uses Bucyrus-Erie bulldozer and Dozershovel to produce agricultural limestone that is applied to farm lands in the area to sweeten soil for better corn crops. Equipment also used to mine strip pit coal.

• Dozershovel used to load out all stone that is crushed at the E. Groenendyk & Sons quarry for liming corn-growing land of the area.

IOWA, FAMED FOR ITS tall corn, is indebted to men like E. Groenendyk of Bussey, Iowa. As head of E. Groenendyk & Sons Lime Quarry of Tracy, Iowa, he works in conjunction with the Agricultural Adjustment Administration (AAA) in producing over 16,000 tons of agricultural limestone a year so that farmers of his area may sweeten their soil for better corn-growing conditions. When weather does not permit the liming of farm lands E. Groenendyk and Sons close down their quarry and use some of the equipment to strip and load coal in the area. And in "spare time" between the quarrying and coal mining operations Groenendyk and his son, W. H. Groenendyk, farm 300 acres of land, mostly planted in corn. Another son, C. P. Groenendyk, is in the army.

With the AAA giving the farmers a subsidy for liming their land and the increased production demands caused by the war, a new quarry to meet increased need for the product was opened three years ago by E. Groenendyk & Sons on the Garden farm about two miles southwest of Tracy, Iowa. This quarry is leased on a royalty per ton of stone produced basis.

The quarry is located on a bluff adjacent to a road and about 100 yards from Cedar Creek, which at high water inundates the surrounding lowlands. The pit of the quarry is on a higher elevation than the preparation plant and the stone quarried in the pit is dumped into a wooden chute built along the face of the bluff just below the quarry pit.

Overburden in the quarry ranges in depth from a maximum of 20 feet to a minimum of ten feet and is covered with trees and brush. The limestone runs about 20 feet thick with the top seven feet composed of a soft rock, a middle six-foot area of thin layers of stone and the lower area being composed of a solid rock stratum.

Beneath the limestone there is from four to five feet of fire clay and then more limestone. The lower limestone area is of rock too hard for Groenendyk's use and so this stone will probably not be quarried.

An International diesel TD-14 tractor with Bucyrus-Erie bulldozer is being used by E. Gronenendyk & Sons to strip the quarry and to clear the land of trees and brush. In the beginning of operations in this quarry three years ago the overburden was pushed over the bluff with the dozer making successive passes until the stone was bared. After quarrying was started the overburden was dozed into the quarried-out parts of the pit. Stripping is done intermittently as stone is required.

The limestone is quarried in three benches. The top bench is the seven-foot layer of softer stone, the middle bench is the six feet of layered stone, and the lower bench is five feet of solid stone in block formation. About two feet of stone is left for the hauling floor of the quarry.

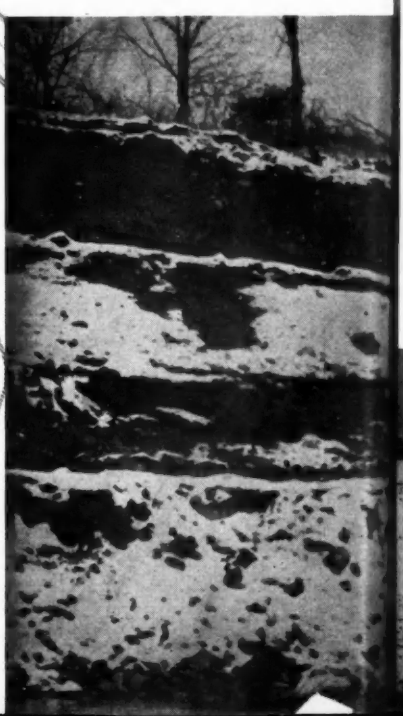
A Chicago Pneumatic drill using a ⅞" steel and 1½" Timken bit powered by a Chicago Pneumatic 160 cu. ft. air compressor mounted on a Ford V-8 truck is used to drill blast holes.

One man does all the blast-hole drilling in the quarry and he drills from 100 to 135 holes per day, depending upon which bench is being drilled at the time. After an area is stripped it is quarried one level at a time. From two to four rows of holes on 18" centers with the rows about three feet apart is the usual blasting pattern followed. It was found that to obtain proper fragmentation at least two rows of holes would have to be blasted at one time. Du Pont explosive is used for all blasting in this quarry. Agritol No. 1 is used for blasting the upper bench, Gelex No. 2 for the middle bench, and a 40% gelatine explosive for the third bench.

The stone is usually blasted every morning with about 100 holes being shot at a time. No secondary blasting is necessary. Any rocks too large to be handled by the crushers are broken up on the quarry floor with a sledge hammer.

A Bucyrus-Erie Dozershovel on an International gasoline tractor is used for loading the blasted stone to trucks for haulage to the crushers. Two 1½-ton trucks, an International and a Ford V-8, are used for hauling.

The trucks are backed into the loading area near the Dozershovel. The Dozershovel operator lowers the ¾-cu. yd. (struck measure) shovel bucket and moves forward into the stone to be loaded so that the bucket is filled. The operator then backs the machine from the stone, raising the shovel at



• Left: A Chicago Pneumatic drill using a ⅞" steel and 1½" Timken bit is used to drill holes for blasting the quarry faces. Above: Chicago Pneumatic 160 cu. ft. air compressor mounted on a Ford V-8 truck is used to power the drill.

the same time, turns the machine and moves forward a few feet to dump into the truck. About seven passes of the Dozershovel are required to fill each truck with six ton of stone.

Early loading operations were carried on by a Caterpillar tractor equipped with a Traxcavator. The Dozershovel was put into the quarry about the middle of August. The new machine uses about 20 gallons of gasoline a day in loading out around 400 tons of stone in eight hours.

The unobstructed visibility offered by the design of the Dozershovel gives the operator an opportunity for speed and maneuverability and the high lift of the bucket provides for a fast and clean dump. The lifting height of the bucket above ground line is 9'4" and the clearance height of the machine with the bucket in dumping position is seven feet. The tractor is equipped with oscillating tracks and, according to the operator, is extremely "easy riding." The oscillating tracks also enable the operator to leave a clean, even floor after loading for both "feet" of the machine are always on the ground keeping the bucket in a level position even though one of the tracks is run on the stone. This oscillating feature of the machine also gives an added safety factor which prevents tipping. The oscillating track frames are the five-roller type with oversize front idlers and 15"-wide track shoes.

The bucket attachment is operated hydraulically and has a front mounted pump. The Dozershovel has hydraulic jacks designed to stop automatically when the bucket reaches its maximum height. The bucket is interchangeable with a 6'10" dozer blade, but the dozer blade is seldom used at the Garden quarry because any cleaning up of the floor that becomes necessary is done with the bucket attachment. Other necessary dozing jobs at the quarry are handled by the TD-14 and Bucyrus-Erie bulldozer.

Quarrying at the present time is near the crushing equipment and it is only a three minute round trip for the loaded trucks to dump and return to the Dozershovel. Because of the short distance from the dumping ramp to the loading position the trucks are backed up to the Dozershovel from the dumping chutes.

The preparation plant has a dual crushing (hammer mill) conveying and storage system. There is no primary crusher. The trucks dump their loads into one of two wooden chutes located on dirt ramps. One of the chutes supplies stone to a Gruendler No. 3XB crusher powered by two Caterpillar 8800 diesel engines and the other chute supplies stone to a No. 2 Universal crusher powered by a Model 75 Caterpillar diesel motor.

The two hammer mills crush the stone to go through a ⅛-inch mesh screen and over 80% of the stone is pulverized to dust in the process. Crushed stone from the Gruendler crusher is carried on a 60-foot long 24-inch wide five-ply rubber belt conveyor to a 20-ton wooden two-compartment bin and the finished product is then loaded out to trucks that run underneath the bins. The product from the No. 2 Universal crusher is conveyed to a similar wooden 20-ton two-compartment loading hopper on a 37-foot long, 18-inch wide four-ply rubber belt conveyor.

E. Groenendyk & Sons sell the agricultural limestone at the site from the

• Left: 20-foot thickness of limestone is quarried in three benches, seven, six and five feet in depth and each bench is composed of limestone of different construction. Overburden ranges from 10 to 20 feet. Below: Overburden from new areas is dozed into the quarried-out parts of the pit, as shown to the left.

• Below: No secondary blasting is done. Rocks too large to be handled by the crushers are broken up on the quarry floor with sledge hammers. Right: Dozershovel using bucket to clean up quarry floor while awaiting truck to load with blasted stone seen in foreground.

• Top: Truck with spreader approaches 20-ton two-compartment loading bin for load of crushed limestone. Above: 1941 1½-ton Ford truck with two-fan Leader spreader used for liming farm land. Below: During off-season E. Groenendyk & Sons use their equipment for stripping and loading coal in nearby pits. Here the Dozershovel is loading coal from a 43-inch vein to a truck. About ten feet of overburden was stripped with the Bucyrus-Erie bulldozer.

loading hoppers. Thirteen truckers using five to six-ton trucks equipped with Boughman and Leader spreaders haul the powdered stone trom the quarry and spread it on the farm lands. The trucks are all privately owned by men who bid on this hauling and spreading work through the county AAA. Each trucker is limited in bidding to 2,000 per truck tons a year and all bids are submitted to and let by the county AAA. Bidding is done on a township basis for area covered. The quarry is required to guarantee the AAA that enough stone will be produced to keep the trucks busy. The farmers order the limestone through the AAA which assigns the trucks to the particular hauling and spreading jobs. Truckers pay the quarry owners for the stone at the rate of $1.25 a ton and collect for the stone, hauling and spreading from the governmental agency. The governmental agency, in turn, deducts this payment from the subsidy paid the farmers by the AAA for liming their land.

The E. Groenendyk and Sons Lime Quarry coal mining operations are not very extensive and are undertaken only to keep the men and equipment working when the quarry is closed down because the land is too wet for the spreader trucks to get on it. The quarry operates an average of at least eight months a year. The quarry is operated by five men as a minimum; one on the Dozershovel, one truck driver, one man drilling, and a man at each crusher to break up any oversize that gets into the hammer mills. Labor shortage is one of the chief difficulties encountered.

Coal obtained in mining operations is used by members of the E. Groenendyk & Sons company and farmers in the area and is hauled by the two trucks used in the quarry. No one particular mine is operated by the Groenendyk's. A small area for a strip pit is leased each year and is stripped and the coal loaded out until weather again permits quarrying. The mine is then abandoned or taken over by some company regularly engaged in strip mining.

Overburden in the coal mine operated by Groenendyks this year averaged less than 10 feet in depth and the coal vein was 43 inches thick. Stripping was done with the Bucyrus-Erie bulldozer used for the same purpose at the quarry and the coal was loaded out with the Dozershovel. In many places blasting was not necessary to loosen the coal for loading and in other places where the coal was a little harder it was shaken up a little by blasting before it was loaded. The coal is not given any preparation and is delivered as mine run.

Loading Coral for B-29 Airstrips on Saipan

• Six power shovels are kept busy loading coral into a continuous stream of trucks on Saipan as Air Corps Engineers construct B-29 airstrips and taxiways on the island. It was from these bases that Superfortresses bombed Tokyo. Note the double spotting of trucks in the lower left.

Press Association Photo

Battling Bulldozers

• A beautiful sandy beach, but far from a picnic ground, was this blood-stained Normandy Peninsula beach-head on D-Day. Allis-Chalmers tractor with Baker 'dozer will pull loaded truck in lower left out of soft sand. *Signal Corps Photo*

• Ammunition and supplies are landed on the beach of the Marshall Islands by Seabees using a diesel TracTracTor equipped with Bucyrus-Erie blade. *Marine Corps Photo*

• Long parade of supplies from an LST is led by A-C tractor with Buckeye bulldozer in this Nanumea Island scene. *Marine Corps Photo*

• Bulldozer-equipped tractors double for pack horses when supplies and equipment must be moved. Seabees load vessels in preparation for further-planned offensive action. Allis-Chalmers tractor with Baker bulldozer is pulling supplies up the ramp of a boat. Other 'dozers seen in picture are: Left center, Cletrac tractor with Emsco bulldozer; center, A-C tractor and Buckeye 'dozer, and right, A-C tractor and Gar-Wood 'dozer. *Navy Photo*

In captioning the pictures on these pages the term "bulldozer" was used in the general sense as usually used by the military service to denote any front-bladed tractor equipment. Many of the pictures show Bullgraders, Trailbuilders, Angledozers and other equipment with special trade names that are grouped by the military under the general term "bulldozers."

• Like Jonah and the whale, this Buckeye 'dozer equipped Allis-Chalmers tractor belches forth pulling a supply-laden scraper from the yawning jowels of an assault boat during the invasion of the Green Islands.
Navy Photo

• Coast Guardsmen shuttle landing craft back and forth from the anchorage to the beach, bringing in fighters and supplies and carrying back wounded. International diesel tractor with B-E 'dozer in foreground is pulling a men and supply-laden barge onto the beach.
Coast Guard Photo

Excavating equipment playing important part on various war fronts is doing basically the same things for the military services that it did for contractors in pre-war days. Men who use the equipment at war will be the men who will make use of it in postwar development.

THE DRAMATIC FEATS of excavating equipment on the various war fronts has been the subject of much widespread publicity. The varied uses to which this equipment is put, its dependable performance under adverse conditions, and the excellent results produced apparently seem amazing—even miraculous —to the general public. But to "dirt movers" the feats of excavating equipment on the war fronts is not phenomenal for it is doing basically the same things at war for the military services that it has been doing for contractors in peacetime. Every excavating contractor knows that bulldozers, scrapers, shovels, draglines, clamshells, piledrivers, cranes, etc., are rugged, efficient equipment with varied uses that can be made adaptable to most any situation that may arise in the excavating industry.

Just as it is not surprising to hear of the feats performed by modern excavating equipment at war, it is also not surprising to read and hear of the excellent manner in which the men who operate this equipment in the war zones conduct themselves under most dangerous and adverse conditions, for we know that these American men have always had courage and initiative.

When we read of bulldozers being used to flush snipers, knock down pillboxes and break through barbed wire entanglements in a "no-man's land," and this and other types of excavating equipment being used to clear and grade land for airfields, roads and camps in advance positions under enemy shellfire, we should remember that it is the operators and not the equipment that are the heroes.

In one report received on a bulldozer being used by the Seabees to clear the land and grade an airfield on Guadalcanal while the area was still infested with Jap snipers, seven operators were shot off the machine in succession. Each time an enemy bullet found the operator, another man was ready to take his place to complete the airfield so that supplies and reinforcements could be brought in.

Unbeatable Team

It is men like the Seabees who were willing and even anxious to take their places at the controls where a com-

• Seabee operator of this Caterpillar diesel tractor and LeTourneau bulldozer fills in Jap tank trap and covers barbed wire entanglements on Tarawa.
Marine Corps Photo

• LeTourneau 'dozer fells a towering coconut tree on Morotai Island as Engineers clear space in jungle for an airstrip.
Signal Corps Photo

• LaPlant-Choate "Tree-dozer" at work on Bougainville.
Signal Corps Photo

BUILDING ROADS

• Seabees gouge out protective supply lines at this Aleutian base with A-C HD-10 tractors and Buckeye bulldozers. *Navy Photo*

• This, road building setting in a Pacific jungle looks peaceful, but the area is infested with Jap snipers. LaPlant-Choate 'dozer on Caterpillar tractor is on road close to Allis-Chalmers tractor equipped with Baker bulldozer frame and a crane attachment in center of picture.

CLEARING PILLBOXES

• Marines use International TD-9 diesel TracTracTor and Bucyrus-Erie 'dozer to hunt Japs on South Pacific islands. The Jap pillboxes were buried so well only a bulldozer could route them out. *Marine Corps Photo*

rade had been killed just seconds before, men who put personal safety in the background in order that their equipment may do a job that means greater safety and strength to our armed forces and a faster realization of V-day who deserve all the credit. They are good men and they have good equipment. Together, this makes an unbeatable team.

And this unbeatable team, good men and good equipment, will be called upon to fight the postwar battle for a better world. There is going to be a lot of reconstruction necessary throughout the world, and right in our own country we have postwar development plans that will make the peace a worthwhile one, with jobs and security for all.

The equipment and men who operate it at war will be the same equipment and men available for this postwar work. Men in the excavating industry who are progressively planning for the postwar era have a wonderful

• LaPlant-Choate airborne bulldozer being put aboard a transport plane in North Africa. *Signal Corps Photo*

AIR TRANSPORT

• Airborne LaPlant-Choate bulldozer and roller being used in North Africa. *Signal Corps Photo*

• Army Engineers use Caterpillar tractor with LaPlant-Choate bulldozer to clear road in Cervaro, Italy. *Signal Corps Photo*

• So that fighting men and supplies can speed to the front, the ever-ready bulldozer — a Baker on Allis-Chalmers tractor in this case — maintains the channels of mud used by overloaded trucks as roads. *Signal Corps Photo*

• Caterpillar diesel tractor with LeTourneau 'dozer working in a sea of mud in an attempt to get trucks through in the Volturno Sector, Italy. *Signal Corps Photo*

pool of experienced manpower from which to make up their organizations. Also, excavating equipment will have gone through the greatest test in the world and we will better know all of its capabilities.

Maintenance will also probably be a far more important item after the war than it was in pre-war days. Contractors who have not been able to replace equipment during the war have come to appreciate the importance of keeping the equipment that they have in the best possible condition. The result has been better production. This will be remembered in the postwar period.

Maintenance Essential

On the war fronts the proper maintenance of equipment is essential to success. As Rear Admiral L. B. Combs (CEC), USN, Assistant Chief of the Bureau of Yards and Docks, Navy Department, told workers of advance base plants in Philadelphia, the Sea-

• An artist's conception of a bulldozer on the offensive. Men shoot Japs flushed from a pillbox by Buckeye bulldozer.

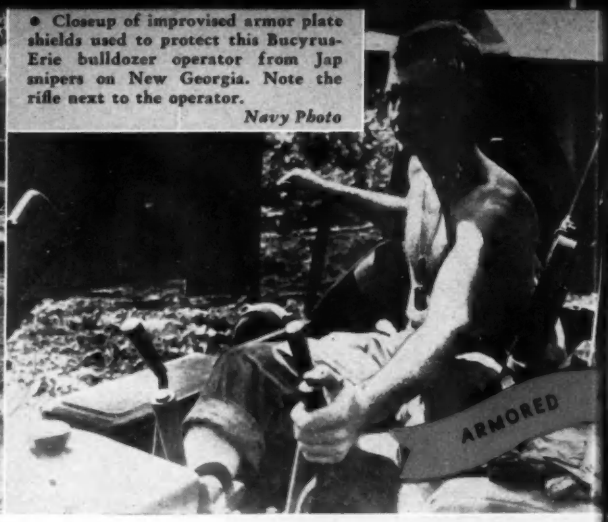
FLUSHING SNIPERS

• Marines use an International TD-9 diesel tractor and Bucyrus-Erie 'dozer to flush snipers from deeply buried pillboxes on Namur. *Marine Corps Photo*

BUILDING REVETMENTS

• Caterpillar tractor and LeTourneau bulldozer being used here to build an airport revetment in North Africa. *Signal Corps Photo*

• Seabees use this Bucyrus-Erie-bladed International tractor for fast clearance of a campsite on a South Pacific island. *Navy Photo*



• Closeup of improvised armor plate shields used to protect this Bucyrus-Erie bulldozer operator from Jap snipers on New Georgia. Note the rifle next to the operator. *Navy Photo*

bees land with all the tools and equipment they need and their problem is to make them do as much work in three months as they would ordinarily do in three years.

"In many cases, machinery is worked 24 hours a day. It cuts through jungles which have been turned into quagmires by torrential rains," Admiral Combs said. "At one island I visited it rained 25 inches in 27 days. In addition, equipment is likely to be constantly exposed to salt water and salt air; and some of it gets blown to bits by enemy bombs and shells. In other words, our advance base gear takes terriffic punishment."

Under these conditions maintenance is most essential if our forces are to continue building airstrips, campsites, supply depots, and ship and plane repair plants and other vital facilities needed to supply victorious invading forces. Parts are not always available on the war fronts and improvisions must be made. Great ingenuity has been shown in this line. These men who are charged with the task of keeping the equipment working under all conditions, are also going to be the men who, when they get back home, will probably be the determining factor between profit and success or loss and failure on private contracts in the postwar era.

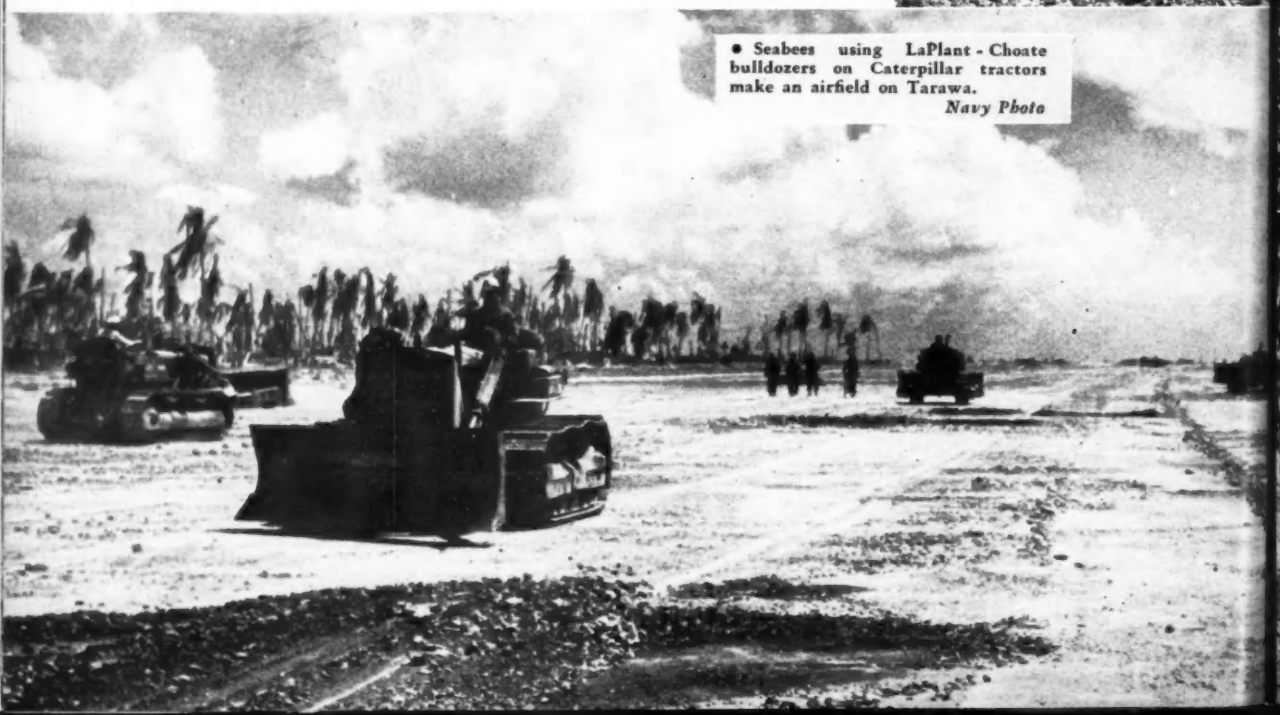
And the men in the military service who successfully plan and direct the excellent work being done on the war fronts are the men who will be available for supervision of peace-time construction jobs. The future development of our land looks rosy.

The bulldozer has been the excavating equipment that has been the object of most publicity during this war . . . it has actually been glamorized. For this reason bulldozers (in the broad sense meaning front end blade equipment attached to tractors) are pictured on these pages in action on the war front.

Although those in the excavating

(Continued on page 45)

• Bucyrus-Erie equipped TracTrac Tors, and scrapers rough-grade bomber strip for the Seabees in th Pacific. *Navy Phot*

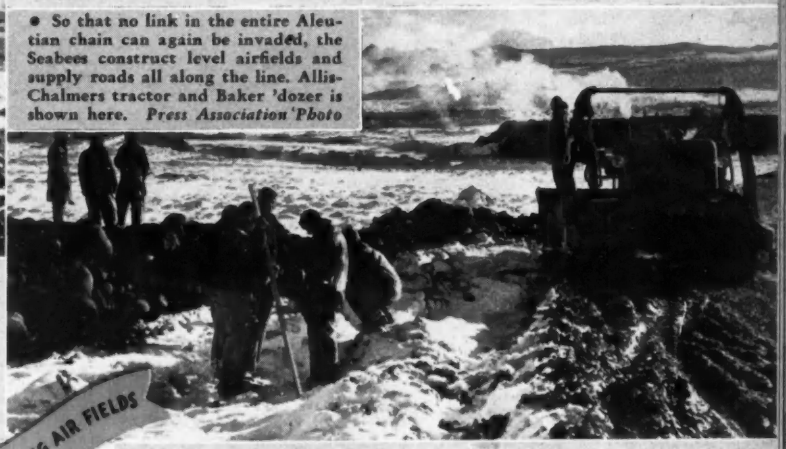


• Seabees using LaPlant - Choate bulldozers on Caterpillar tractors make an airfield on Tarawa. *Navy Photo*

• In a matter of minutes after the "all clear" signal sounds this La-Plant-Choate bulldozer and scraper will have this bombed airfield levelled off for service again. The U. S. Airborne Engineers use this equipment which is small enough to be flown anywhere by transport plane or glider.

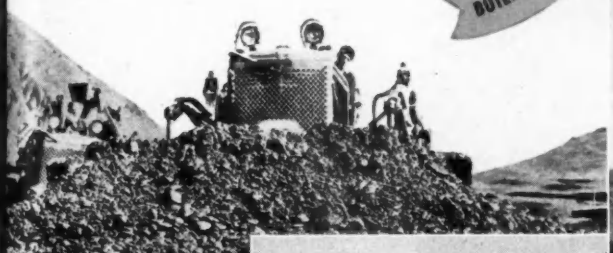
LANDING THROUGH WATER

• "Come hell or high water," the Marines get through. In the landing at Tarawa this diesel TracTracTor with Bucyrus-Erie blade got through high tide to be the first bulldozer ashore. *Marine Corps Photo*



• So that no link in the entire Aleutian chain can again be invaded, the Seabees construct level airfields and supply roads all along the line. Allis-Chalmers tractor and Baker 'dozer is shown here. *Press Association Photo*

BUILDING AIR FIELDS

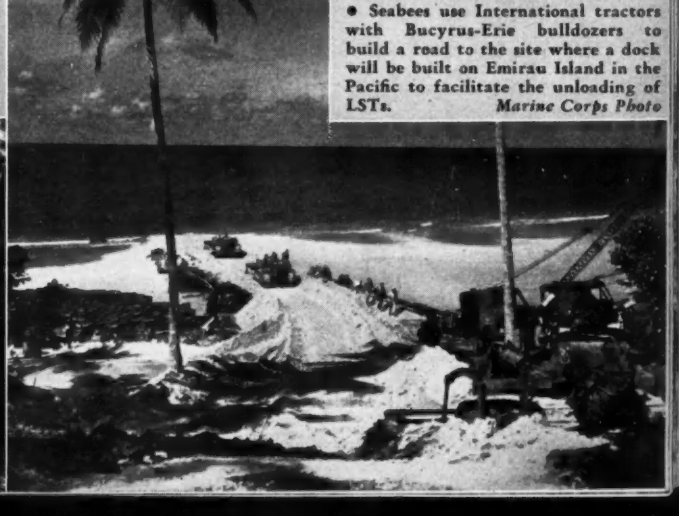


• Two powerful International diesel tractors equipped with Bucyrus-Erie 'dozers level off this rocky material in the construction of an airstrip on Attu Island in the Aleutians. *Navy Photo*

• Leading interference for the scrapers these A-C HD-10 tractors with LeTourneau bulldozers clear a runway for fighter planes in the Southwest Pacific. *European Photo Service*

• Roaring back and forth, this Allis-Chalmers tractor and scraper and International tractor and Bucyrus-Erie bulldozer level an airstrip in a coconut grove. *Navy Photo*

• Seabees use International tractors with Bucyrus-Erie bulldozers to build a road to the site where a dock will be built on Emirau Island in the Pacific to facilitate the unloading of LSTs. *Marine Corps Photo*



the Skokie Highway

Charles Lenz's Bucyrus-Erie 15-B shovel travelled from one-half to three miles a day in loading trucks with broken up concrete from areas patched by the Peter J. Crowley Company on busy U. S. Highway 41 in Cook County, Illinois.

SINCE PEARL HARBOR road maintenance on the highways of this country has been confined to only the essential work such as the care of drainage, repair of defects in road surfaces and surface dressing. Lack of available equipment, material and manpower has made a minimum of maintenance possible.

Despite the reduction in road maintenance and the estimate by the U. S. Senate Special Committee on Postwar Economic Policy and Planning that perhaps over 200,000 of America's nearly 5,000,000 trucks are out of operation, the ton-miles of traffic being hauled on main highways has held at the 1940 level of 46,000,000 ton-miles. This means that average truck-loads are heavier, and consequently, the wear on highways is greater.

The State of Illinois last year was confronted with the problem of patching one of the busiest highways in the middle west without interrupting traffic. This job, patching the stretch from Lincoln Avenue in Chicago north to the Cook County line on U. S. Highway 41 (The Skokie Highway) was contracted for by the Peter J. Crowley Co. of Chicago. This company has had considerable experience in highway maintenance work for in previous years similar jobs had been done on such busy Chicago streets as 12th, Harrison, First Avenue, Irving Park Blvd., and Milwaukee Avenue.

A Bucyrus-Erie 15-B ½-cu. yd. gasoline shovel owned by Charles Lenz of Cicero, Ill., was rented with operator and hauling trucks to the Crowley Company for the work on the Skokie Highway patching job.

The power shovel was used to excavate broken up concrete and clear out the spots that needed patching. Because the shovel was required to move from one-half mile to several miles a day, depending upon the length of haul for trucks spoiling the excavated concrete, and on the number and size of patches required, easy mobility was a big factor in efficient operation. The Peter J. Crowley Co. used a larger shovel, a 1½-cu. yd. Lorain, for this work the previous year but found that the smaller, more mobile shovel was better adapted to the work. Another advantage of the 15-B was the lesser danger of this lighter shovel cracking the pavement as it moved over sections of the road while excavating.

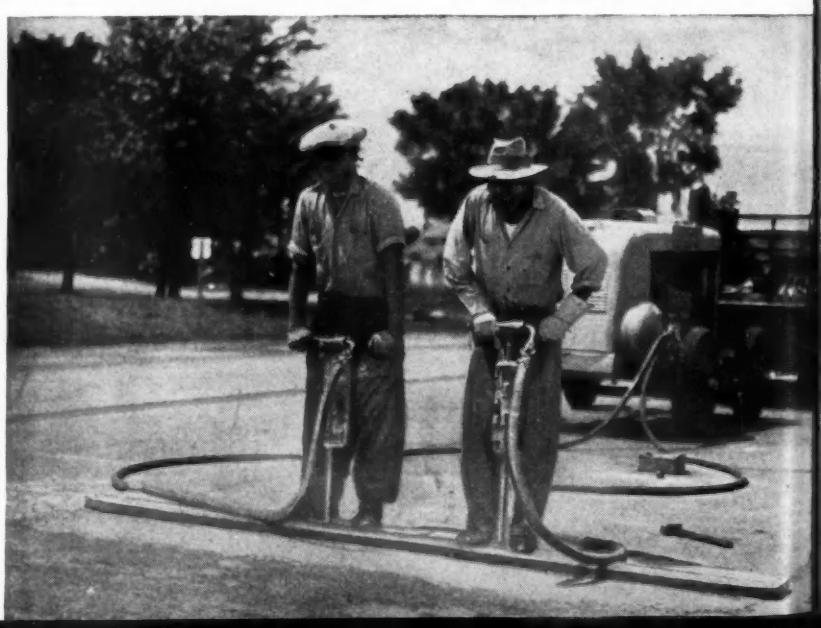
The patching job on the Skokie Highway involved the removal of six or seven thousand cubic yards of broken concrete and repaving of areas where cracked concrete had been removed. A limited number of holes could be opened at a time because of the hazard involved in closing to traffic too long a stretch of this busy highway.

The patching crew worked northward on the right side of this four-lane highway the entire length of the approximate 18-mile stretch being patched and then worked southward on the other side of the road in completing the job.

A crew of three, consisting of a foreman and torch man, and two hammer-men led the patching gang. Using a Gardner-Denver air compressor towed by a pickup truck, the two hammer-men first scored the area by drilling holes spaced on four-inch centers with Ingersoll-Rand Jackhamers using one-inch bits. The concrete slabs were nine inches thick on the outside and seven inches thick at the center. Each bit was used to drill about 15 holes before it needed resharpening. About 50 bits a day were used for the two drills. All bits were resharpened in the Crowley Company's own shop.

After the area to be excavated, and later patched, was scored, the Jackhamers were used with three-inch bits to drill into the concrete from the side to expose the ⅞-inch steel reinforcement rods which were then burned off with an acetylene torch. A concrete breaker followed the drilling crew and broke up the concrete by hammering it so it could be handled by the power shovel. The concrete breaker was used only when enough patches were scored in advance to make it practical to bring it on the job. Usually about 1000 square yards were broken up a day with the concrete breaker.

Following the breaker came the Bucyrus-Erie ½-cu. yd. shovel. The shovel used the shoulder of the road in travelling from one area to be patched to the next. With the mounting running parallel to the road the shovel dipper was swung to a position at right angles with the mount-



• Using Ingersoll-Rand Jackhamers with one-inch bits powered by a Gardner-Denver air compressor, two hammer-men score the area to be patched by drilling holes spaced on four-inch centers.

• Left: As the shovel takes its first passes in a patch area the mounting is parallel to the road. Later (below), the mounting is turned and the shovel digs in toward the center of the road with one caterpillar riding 8x8 wooden blocks and the other caterpillar riding the concrete adjacent to the patch area.

ing and started loading out the broken concrete to trucks. The trucks were backed up to the side of the shovel adjacent to the area being excavated. The trucks hauled about seven square yards of the broken concrete per load. As the shovel worked in from the shoulder the cats were turned into the cut and one of its caterpillar mountings rode the firm concrete adjacent to the area being excavated, and the caterpillar mounting in the excavated area rode 8x8 wood blocking which kept the shovel on a level as it worked. The shovel operator, Arthur Tatge, who operated this shovel exclusively for the past three years, dug directly ahead and swung a 90° arc to dump into the trucks. A ground man who accompanied the shovel up the road placed the blocking under the treads and broke up with a sledgehammer any pieces that were too large to be handled by the ½-cu. yd. dipper. This man also cleaned up around the shovel and moved the road barricades. After the shovel had cleaned out a patch area it was backed out to the shoulder and moved to the next patch area where the procedure described was repeated.

Three or four hauling trucks were used, the number depending entirely upon the length of haul to a dumping area. The broken up concrete was dumped wherever an available dumping area was found and the maximum haul was about four or five miles from the shovel. Up to 40 truck-loads of broken concrete were hauled during the daily shift worked on this job. The weight per truck was about 31,000 pounds gross. The distance between patches, as well as length of haul, determined the daily haul of the trucks, but an average was from 300 to 400 square yards of concrete a day.

The Bucyrus-Erie 15-B used between 15 and 20 gallons of gas per eight-hour day. The operator greased the machine every day, in the morning in hot weather and in the evening after the machine had been warmed up through running in cold weather. The shovel was left on the job each night. Lenz owns crane boom and backhoe attachments for his shovel but they were not used on the patching job.

After the patch areas were excavated, they were graded and paved. The paving crew worked only when sufficient area had been prepared to allow the crew to work a full shift. An average day's paving was about 800 square yards total, including move-up time to succeeding areas.

Labor shortage was the chief difficulty that confronted the Peter J. Crowley Company on this job. Scoring the areas to be patched and paving operations were often delayed because of shortage of manpower.

• A ground man who accompanies the shovel places the blocking under the treads, cleans up around the shovel and moves the road barricades.

READ THE FACTS!

F. A. McKENZIE, PRESIDENT — JAMES C. McKENZIE, VICE-PRESIDENT — F. A. McKENZIE, JR., VICE-PRESIDENT — SADYE M. McKENZIE, SECRETARY-TREASURER

ATLANTIC DREDGING & CONSTRUCTION COMPANY
OKEECHOBEE, FLORIDA

ADDRESS REPLY TO FIELD OFFICE AT:
Box 957
Pine Bluff, Arkansas

November 7, 1944

Little Rock Road Machinery Company
813 East Second Street
Little Rock, Arkansas

Gentlemen: --

We are pleased to answer your inquiry relative to our experience with the three MISSISSIPPI WAGONS we purchased from you for use on our 1,096,000 yard levee construction job near Pine Bluff, Arkansas.

We are moving at least 2500 yards of paydirt every 10-hour shift with these units on hauls up to 800 feet one-way, or 1600 feet round-trip. This is a larger volume than we ever secured with three hauling units before under similar conditions. Our haul road is spongy, but due to the flotation of the MISSISSIPPI WAGON, we can carry a full pay load. We also make good speed in spite of the rough haul road, due to the comfort provided the operator, and the ease and safety of the steering, since drivers do not have to worry about having the steering wheel knocked from their hands on rough haul roads.

For the yardage moved, the fuel consumption on the MISSISSIPPI WAGON is less than half of the fuel consumed by any hauling unit we have ever previously used.

We had some hauling to do over extremely sandy haul roads that all of our previous experience definitely indicated could not be accomplished by any rubber tired hauling equipment, but we tried the MISSISSIPPI WAGONS on this haul and found they handled it with ease. We attribute this primarily to the low pressure drive tires used on the tractor, which have an unusually large ground contact area when the weight transfer mechanism was used.

The MISSISSIPPI WAGON has given us the cheapest hauling costs we ever had on construction work, and we feel they will do likewise on long gravel or topping hauls, which eliminates the need for two investments.

The above, plus the fact that they dump sticky buckshot cleaner and quicker than any hauling unit we ever used, and the extremely low cost of replacement parts, satisfies us very much with our investment in MISSISSIPPI WAGONS.

We have had over 30 years experience in the contracting business on various types of construction work throughout the southeastern part of the United States, with contracts for as much as 7,000,000 yards at one time, and we are better pleased with our investment in MISSISSIPPI WAGONS than any hauling units we ever invested in before.

Yours very truly,

ATLANTIC DREDGING & CONSTRUCTION COMPANY
By F. A. McKenzie Jr.
Vice-President

FAMJr:jm

THE ABOVE LETTER GIVES MANY REASONS WHY IT PAYS TO USE

MISSISSIPPI WAGONS

USER TELLS WHY HE LIKES MISSISSIPPI WAGONS

MISSISSIPPI WAGONS on an Atlantic Dredging & Construction job near Pine Bluff, Ark.

MORE AND MORE CONTRACTORS ARE FINDING MISSISSIPPI WAGONS THE ANSWER TO PROBLEMS IN COMPETITIVE HAULING

Whenever construction equipment—like the MISSISSIPPI WAGON—consistently does a job faster, better and cheaper, it gains more and more friends among contractors. The growing popularity of the MISSISSIPPI WAGON among veteran contractors is further evidence that the MISSISSIPPI WAGON is the "world's most modern hauling unit," designed for long and short hauls of dirt, gravel, topping, stone, coal, etc., over varied types of terrain.

Plan now to include MISSISSIPPI WAGONS in your 1945 operations. Be ready to enter a low bid in competing for hauling work. To fill varied hauling needs, the MISSISSIPPI WAGON is manufactured in three sizes as follows:

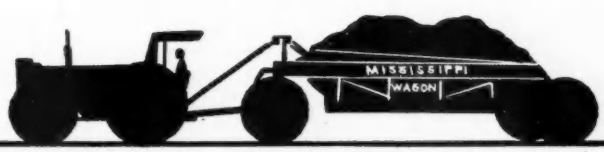
Model 75—10.5 yards heaped capacity (with standard sideboards)
Model 85—10.5 yards heaped capacity
Model 120—15 yards heaped capacity.

The weight transferring feature, found ONLY in the MISSISSIPPI WAGON, prevents the vicious "beating" a tractor must take with the ordinary semi-trailer hauling unit. This feature adds life to the tractor, provides the extra weight needed for traction during bad going, and holds repairs to an unbelievable low cost.

There are many other features you'll like about this unit. Contact your nearest International Industrial Power distributor, or write us, for full information.

Remember, Postwar Competition Will Be Tough, but not for the owner of the MISSISSIPPI WAGON—

"the World's Most Modern Hauling Unit."



MRS MANUFACTURING CO.
JACKSON, MISSISSIPPI

Shots from the FIRING LINE

Private Enterprise Must Plan For Full Employment

Despite campaign promises in regard to private enterprise, free enterprise is safe from Government interference only so long as people are employed, William Muirhead, president of the Associated General Contractors of America, warned in pointing out the need for realistic planning for the postwar period.

"If widespread unemployment occurs after the war," he explained, "people will demand that something be done by the Government — which may be contrary to the spirit of free enterprise."

Mass unemployment in the large war industry centers would seem to be inevitable when war production is reduced, he continued. Cuts in any of the major war industries will necessarily result in thousands of workers losing their jobs.

"Construction is often cited as the industry which can provide employment and stimulate business activity in emergency periods," Muirhead said. "It is true that construction is susceptible of an enormous increase—far beyond the volume of any pre-war year. It can also be started quickly. But construction must be planned in advance, and construction, other than public works, depends on business conditions and prospects."

As a means of stimulating business activity in the postwar period, Muirhead advocated revision of wartime taxes. A reduction in excess profits tax should be made after the collapse of Germany, he said, together with elimination of most "nuisance" taxes. He also advocated the use of incentive taxes to stimulate business activity, particularly depreciation of new industrial and commercial structures and of new machinery and equipment.

Mr. Muirhead said that the Executive Committee of the AGC had approved a plan for accelerated depreciation of new structures for taxing purposes, and supports a similar plan for depreciation of new machinery and equipment. Both these plans, he added, are in line with the proposal for tax allowances in the postwar period suggested by President Roosevelt in his recent speech in Chicago.

Under the AGC plan for accelerated depreciation, owners of structures built after the war would be permitted to depreciate one half of the cost of the structure in the first quarter of its useful life. On a building costing $100,000 with a useful life of 40 years, for example, a depreciation of $5,000 a year would be allowable during the first 10 years, or one half of the total cost.

• To open the streets for military traffic, U. S. Army Engineers use a Bucyrus-Erie ½-cu. yd. shovel with a wooden cab to load debris to a truck in Domfront, France. The town underwent a terrific shelling before it was liberated by the advancing American forces. Another power shovel can be seen in the background.

U. S. Signal Corps Photo

Predict First Year of Postwar Production to Equal 1938

Construction activity in the United States during the first twelve months after an Allied victory in Europe, or after that day when most war controls on materials and man power are relaxed, whichever is earlier, is likely to approximate the volume of the year 1938, according to estimates made by F. W. Dodge Corporation.

The 1938 contract volume for the 37 states east of the Rocky Mountains, as reported by the Dodge Corporation, was $3,197,000,000, as compared with an indicated final contract total for the current year 1944 of approximately two billion dollars.

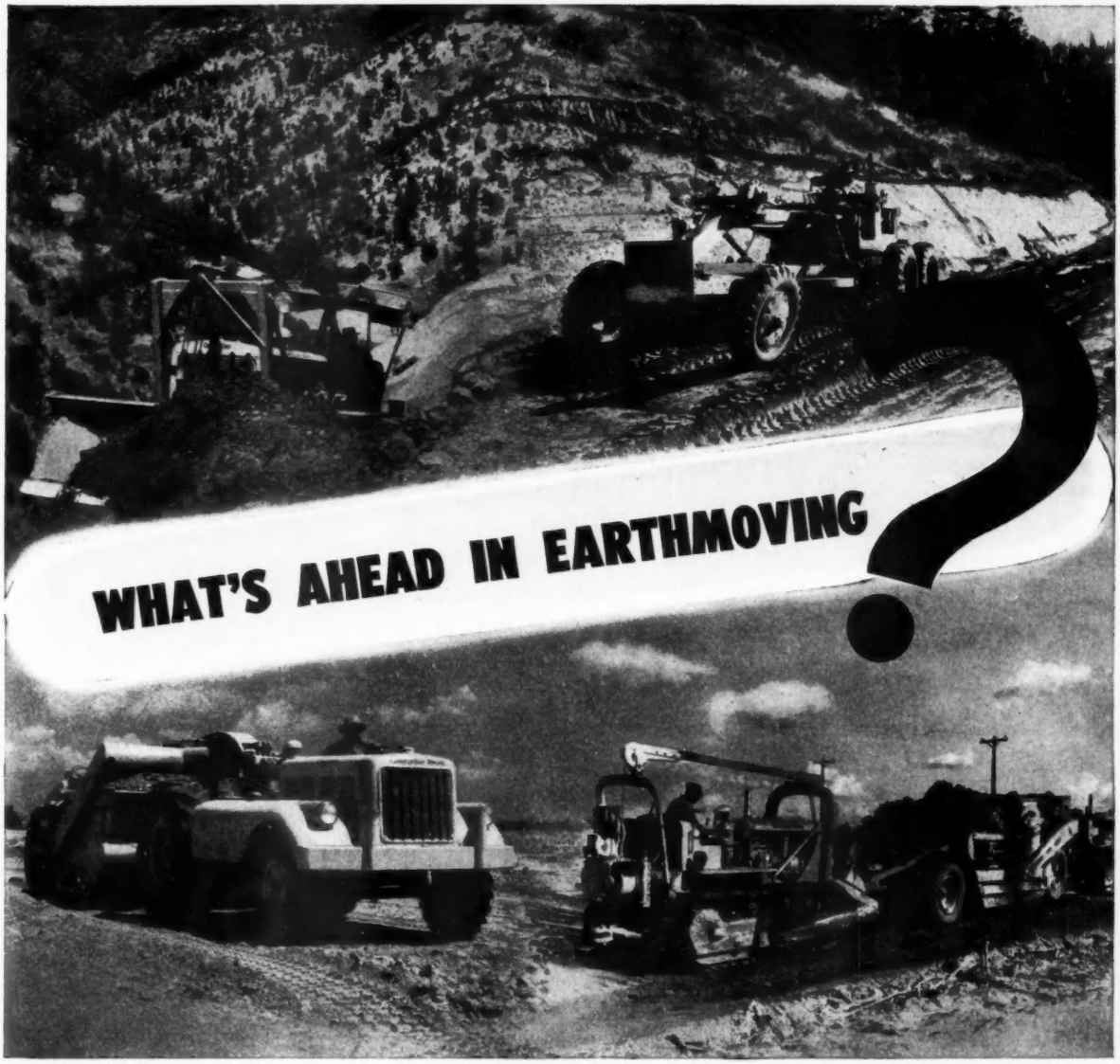
Lift Restrictions on Use of Portland Cement

Restrictions on Portland cement, which formerly limited manufacture to three specified types, were removed by the War Production Board through revocation of Order L-179.

When the order was originally issued in August, 1942, requirements for Portland cement for military and other essential construction work were unusually high and were expected to go higher, WPB said. Total 1942 consumption was 185,000,000 barrels, the highest consumption figure on record. The order was designed to increase production of the three most commonly used types by prohibiting manufacture of modifications of these types. Other provisions of the original order, subsequently removed, had prohibited the earmarking of storage bins for individual customers. This restriction was intended to promote full utilization of all available storage space.

Iowa's Postwar Group Submits Big Program

Iowa's State Postwar Commission, meeting December 6 in Des Moines, unanimously approved for submission to the 1945 State Legislature a $638,000,000 postwar road construction program, the financing of which would involve an increase in the state gasoline



EARTHMOVERS are going to be busy. You are getting ready now for the big jobs that lie ahead when the fighting stops. And in any long-range planning, it's worth while to take a look at some records:

Long before the war, "Caterpillar" Diesel earthmoving equipment had won its reputation for stamina, economy and dependability. You know the number of "Caterpillar" *firsts* in the field — from the original track-type tractor and the introduction of Diesel power to the operating ease of finger-tip control. You know, too, that sound engineering and thorough testing have always *proved* new "Caterpillar" developments before they appeared on the market. "Caterpillar" customers have no orphan machines.

The thousands of "Caterpillar" Diesels serving our Armed Forces in this war offer added evidence that these sturdy machines rate foremost preference when you put in your orders for new contracting equipment.

Soon the "Caterpillar" Diesels for civilian uses will again be rolling off the production lines. Through "Caterpillar" quality, Diesel economy, correct design, all types of matched equipment to fit the job — and through top-notch dealer parts and mechanical services that help keep the job rolling — "Caterpillar" means *lowest costs on earth.*

CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR DIESEL

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ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT

tax rate from three to four cents per gallon; expansion of the present state compensation tax now collected only on trucks with franchise rights over fixed routes, and abolition of tax refunds paid to farmers and others on gasoline used for non-highway purposes except in the case of aircraft fuel.

It was estimated that the proposed tax changes would increase road use revenues approximately $12,000,000 a year.

Described as a "down-to-earth" program for "repairing war damage and servicing traffic volumes known to have been on the roads before the war," the program contemplates the expenditure of $188,000,000 on primary roads, $354,000,000 on secondary roads and $96,000,000 on municipal roads and streets in the 12 years immediately following the end of the war.

Navy Makes Appeal for More Seabee Officers

The U. S. Navy announces the reopening of officer procurement for the Construction Battalion. This program has been closed for over nine months and has reopened with the highest priority rating—No. 1.

The splendid mark established by the Construction Battalion, more popularly known as the C.B.'s (Seabees), should be an inducement for scores of construction men to volunteer for this duty. Without the successful effort of those men now serving in the Seabees, our fleet could not be where it is today. Now, increased effort is necessary for building many new bases, landing fields, and harbors. The further our Navy, Army, and Marines go in the Pacific, the greater the need for more construction becomes.

The Navy wants and vitally needs qualified engineers who will be capable of organizing and directing this work. Preference is for men under 38, although in some cases the age limit extends to 50.

Many engineers are needed — civil, electrical, as well as construction, and all men who are not presently employed in essential industry are urged to visit

ASD

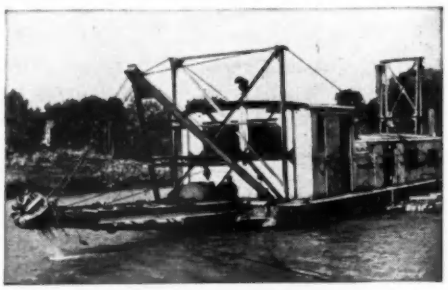
DREDGING EQUIPMENT

HYDRAULIC - DIPPER - CLAMSHELL

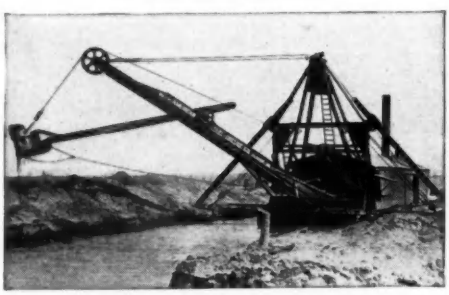
Complete integrated units, each designed for specific performance.

Bolted sectional steel hulls, power and pumping units, spuds, frames, ladder or booms are shipped by truck, rail and/or as hold cargo. May be easily assembled at inland site and dismantled for relocation after project is finished.

ASD dredges are backed by 40 years of dredge engineering and operating experience.



HYDRAULIC DREDGES
Sizes 8 inches up



DIPPER and CLAMSHELL
¾ cu. yd. up

We invite inquiries now for post-war delivery.

Write for catalog, photos and data sheets.

AMERICAN STEEL DREDGE CO. INC.
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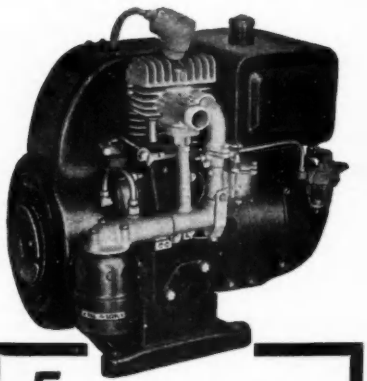

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For Any Job—Anywhere

ONAN ELECTRIC GENERATING PLANTS supply reliable, economical electric service for excavating and contracting uses as well as for scores of other general applications.

Driven by Onan-built, 4-cycle gasoline engines, these power units are of single-unit, compact design and sturdy construction. Suitable for mobile, stationary or emergency service.

Models range from 350 to 35,000 watts. A. C. types from 115 to 660 volts; 50, 60, 180 cycles, single or three-phase; 400, 500, and 800 cycle, single phase; also special frequencies. D. C. types range from 6 to 4000 volts. Dual voltage types available. Write for engineering assistance or detailed literature.

Over 250,000 Now In Service

D. W. ONAN & SONS
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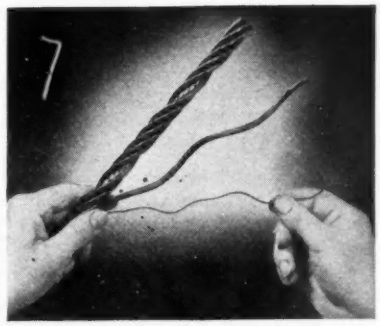
ELECTRIC PLANTS
Onan
POWER AND LIGHT FOR EVERY NEED

"Here are 6 reasons why I like Macwhyte PREformed Wire Rope!"



HERE'S HOW Macwhyte PREformed Wire Rope is made. Notice that the wires have a spiral shape. They have been PREformed. When the rope is made, both wires and strands fit naturally into position with a minimum of internal stress and friction.

Keep asking for MACWHYTE PREformed!

The demands of our armed services are so great now, there may be times when we cannot give you our usual prompt service and delivery. The situation changes from day to day, so please keep trying. We'll serve you if we possibly can.

MACWHYTE PREformed WIRE ROPE — Plus Internal Lubrication Selected Steels Tested-Proved

The correct rope for your equipment

"For maximum wire rope satisfaction and service, give me Macwhyte PREformed every time."
"Here's why!"

- ***"FIRST, Macwhyte PREformed lasts longer.***

  I've found that it outwears non-PREformed ropes by a big margin. That's because internal friction and fatigue are virtually eliminated. In Macwhyte PREformed, each wire and strand are shaped to lie *naturally* in the rope."

- ***"SECOND, it's more economical.***

  Because of the extra-long service Macwhyte PREformed gives, I get lower cost per load carried. My records show it actually saves me money!"

- ***"THIRD, it means fewer shut-downs.***

  That's mighty important to me, because I need every man-hour possible to maintain production schedules."

- ***"FOURTH, it's easy to install.***

  Macwhyte PREformed does not kink during unreeling. It is extremely flexible and can be put on equipment *fast*, thus saving precious time."

- ***"FIFTH, it is safer to handle.***

  Macwhyte PREformed can be cut without seizing. Broken wires stay in place, do not wicker out to injure workmen's hands."

- ***"SIXTH, Macwhyte PREformed has Internal Lubrication:***

  Heavy lubricant improves the sliding action of wires as they move in bending around sheaves and drums. In many cases the inside wires are in good condition after the outside wires are seriously worn."

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Wire Rope Manufacturers

NO. 700

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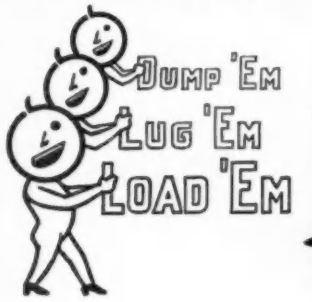
For Non-stop Production Programs



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Use 5 to 10 dump buckets with each Load Lugger to get maximum results.

Start your 1945 contract jobs with the Brooks *economy system* of material handling. By equipping your trucks with LOAD LUGGERS, you can load, haul and dump in a continuous operation. It's faster and more efficient than ordinary trucks, especially on hand loading jobs . . . for excavating, road building, construction work, quarry operations, hauling supplies, snow removal, etc. Write for Catalog No. 44 . . . also ask about the TrucKrane boom attachment for special hoisting jobs.

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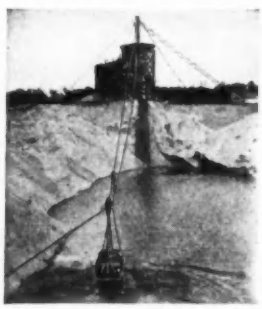
Long Range Machines

MOVE MATERIALS AT LOWER COSTS



Above picture shows how a Sauerman Stackline Cableway digs deep under water and lifts gravel to a hopper on top of a screening plant. The operating cost is only a few cents per cubic yard handled and the machine cleans up every yard of material within a 700-ft. radius of the plant. This machine was installed in 1919—has handled several million cubic yards at three locations—is still as good as new.

ON jobs where materials are to be moved distances of several hundred feet or more from pits, ponds, banks or stockpiles, a Sauerman Drag Scraper or Cableway is a great money-saver because it will dig, haul and place the materials in one operation.

First cost of a Sauerman machine is reasonable, maintenance expense is light, and the simplicity of operation permits easy one-man control of even the largest installation.

Moreover this equipment is very flexible and is readily adapted to meet any new and difficult working conditions. Sizes range from small portable units designed for cheap handling of a small hourly tonnage of loose materials up to powerful machines that will take 15 cu. yd. at a bite and haul this big load to a delivery point 1,000 ft. away at high speed. *Write for catalog.*

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their nearest Office of Naval Officer Procurement to see if they can qualify for this highly important and responsible work.

Applicants under 35 must have a degree in Civil Engineering from an accredited college, plus several years of experience in field construction work. Men between 35 and 50 who do not have a college degree will be considered providing they have at least 10-15 years experience in responsible charge of construction work. Those men over 35 who do not have a degree and who have less than 10-15 years of supervisory experience may be considered for warrant officer appointment.

Men who are not themselves eligible because of age, or physically disqualifying factors, are asked to direct men who are eligible to the Navy or to consider releasing men in their employ who are able to qualify. Candidates are asked to visit or write to any one of the Offices of Naval Officer Procurement.

Louisiana Engineering Society Hold Meeting

The Louisiana Engineering Society will hold its annual meeting at the St. Charles Hotel, New Orleans, La., January 11-13. The three-day program will include a number of technical papers to be delivered by engineers with nation-wide reputations. Mr. Stone Leake of General Electric Company is convention chairman and he is assisted by Charles Kerr, president of the Society.

Brazilian Highway Official Visits United States

Dr. Clovis Pestana, energetic, 41-year-old Director General of Highways of the Brazilian State of Rio Grande do Sul, is now completing a tour of the United States as guest of the Office of Inter-American Affairs and the American Road Builders Association. He arrived in October and will return to Brazil in March.

Dr. Pestana has occupied his present post since 1938. During his administration as Director of Highways, that is in the five-year period between the end of 1938 and the end of 1943, he has directed the construction of more miles of highway than were built in that state during the previous 40 years, involving the expenditure of $12,500,000.

As part of his program to add an additional 5,000 kilometers of highways to Rio Grande do Sul, Dr. Pestana has come to the United States to study highway construction and maintenance methods and to visit the plants of some of the larger highway and automotive equipment firms.

Rio Grande do Sul, the southernmost state of Brazil, has as neighbors Uruguay and Argentina. It has an area of 110,150 square miles, twice the size of Illinois. This state is a rich livestock and farming region with a temperate zone climate and is the home state of Brazil's chief executive, Getulio Vargas.

The visit of Dr. Pestana to the United

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SMOOTHER BEDS for RAILROADS!

Building the nation's vast network of railroads created a market for countless millions of tons of aggregate and each year millions more should be added to keep them smooth. During the past few years this has been impossible because of labor shortages.

The outlook now is for ballast to be one of the big markets for producers of crushed stone and gravel. The railroads have plenty of funds available for track maintenance and, if the supply of labor permits, they will use it for that purpose.

Cedarapids aggregate producing and crushing equipment will help you produce better aggregate for ballast, highways, airports and other construction jobs, and it will cost you less too. Remember this — the Cedarapids line is complete and will meet any aggregate production problem either from the standpoint of output or character of materials for either an entire plant or a single piece of equipment. You'll be way ahead if you come to Iowa now for your essential needs and be one of the first in line for postwar deliveries. See your Iowa dealer right away or write direct.

IOWA MANUFACTURING COMPANY
CEDAR RAPIDS, IOWA

CEDAR RAPIDS

ARMY E NAVY

Ewing Galloway Photo

Cedarapids

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THE IOWA LINE
of Material Handling Equipment
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ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
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STRAIGHT LINE ROCK AND GRAVEL PLANTS
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PORTABLE POWER CONVEYORS
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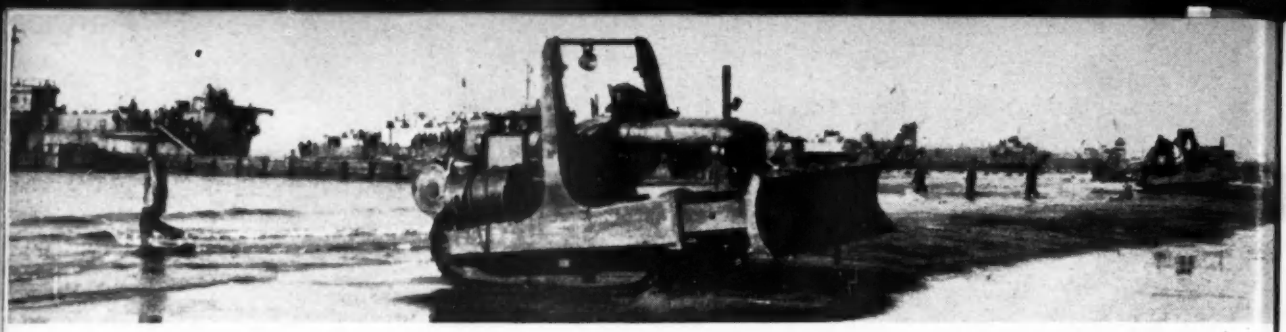
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS



• **Baker Gradebuilders on Allis-Chalmers tractors landing on European beach during invasion operations.** *U. S. Signal Corps Photo*

States is expected to be the forerunner of similar visits by highway executives from other American republics.

Ask Coordinated Development of Water and Power

The Madera Irrigation District with headquarters in Madera, California, has requested the U. S. Bureau of Reclamation to undertake the coordinated development of the water and power resources of the Fresno and Chowchilla rivers, according to a resolution passed by the board of directors at its last regular meeting.

The formal resolution "urged and requested" that the work be undertaken by the Reclamation Bureau and that the operation of the structures built to develop the water resources of the two rivers become an integrated operation with the Madera Canal feature of the Central Valley Project.

The purpose of the Fresno and Chowchilla river development, the resolution says, is to expand the irrigated acreage of the region, generate hydro-electric power "to the end that the water of the said streams be put to greater and more beneficial use than now obtains," and to increase storage of flood waters on these rivers, each of which has an average annual run-off of more than 65,000 acre-feet.

Under plans outlined by the Madera District, water from the Fresno River would be stored and diverted into the Chowchilla River for power development "in substantial and profitable amounts." Under the proposed plan, the Madera Canal would supply the requirements of the Madera Canal and Irrigation Company whose present source of irrigation water is the Fresno River.

The resolution points out that "in order to make for efficiency and coordination of operation" the project "should be undertaken by the same agency, namely, the U. S. Bureau of Reclamation, which by its operation of the Madera Canal unit of the Central Valley Project is in a position to, and would be requested to deliver such substitute supply for the use of lands in the Madera Irrigation District which would otherwise be served by the waters of the Fresno River."

Expect Private Construction To Exceed Public Building

Private industrial construction in 1945 will exceed public industrial construction for the first time since 1940, it was predicted at a meeting of the Producers' Council in New York City recently.

Basing the prediction on postwar estimates of industrial construction prepared by the Market Analysis Committee of the Council, Charles E. Young, economic research supervisor of the

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Welded Rolled Steel construction builds longer life and greater utility into Wellman buckets. Multiple Rope and Power Arm types. Dragline. Power Wheel. Special Service Buckets. ⅜ to 16½ yd. capacity.

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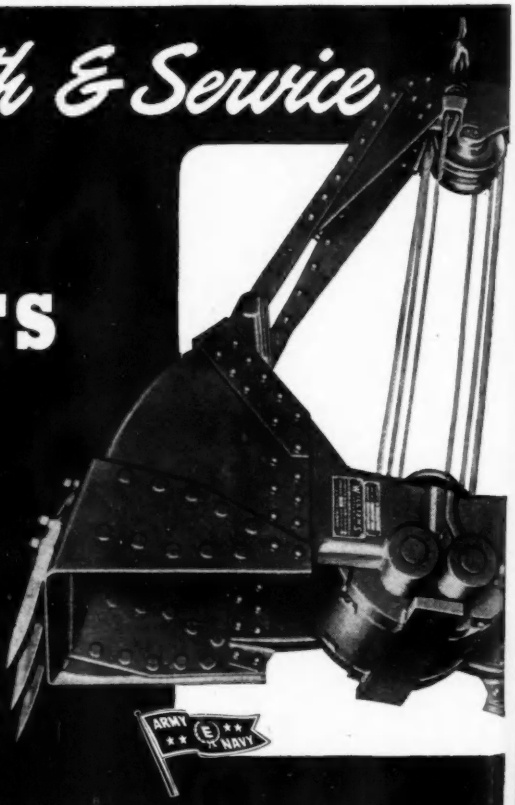
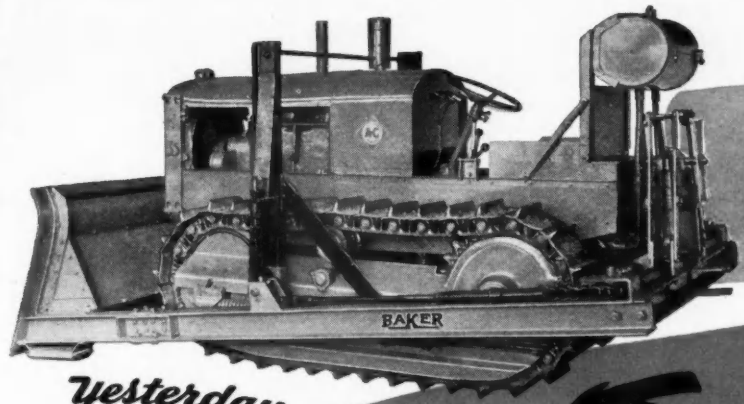




Yesterday

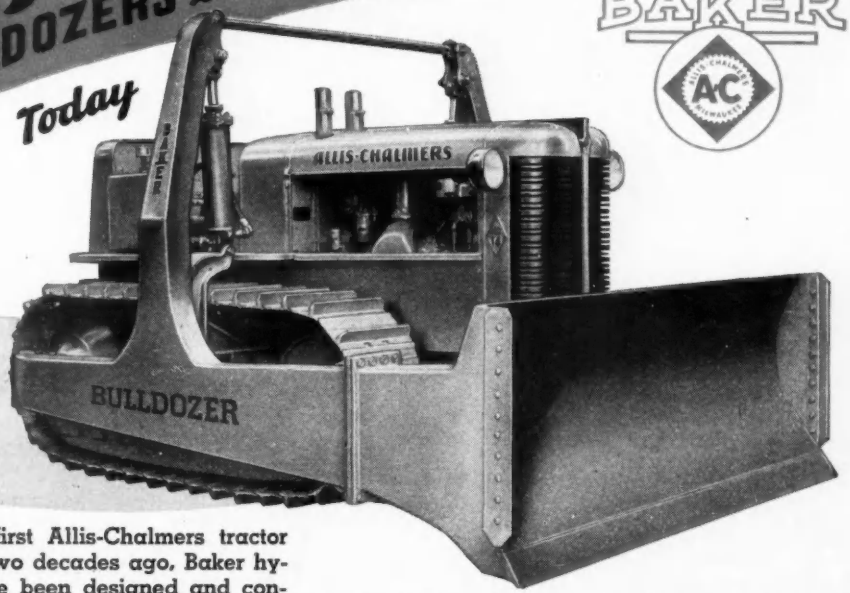
"like salt and pepper"

They Go Together!

BAKER BULLDOZERS and ALLIS-CHALMERS TRACTORS

Today

BAKER



Ever since the first Allis-Chalmers tractor was built over two decades ago, Baker hydraulic bulldozers have been designed and constructed for use with them. From that day to this, there has always been a Baker for every model Allis-Chalmers crawler tractor. Bakers are not adapted to—*they're built specifically for*—Allis-Chalmers tractors. Like salt and pepper, bacon and eggs, or bread and butter—*they go together!*

Baker engineering has kept pace with the progressive improvement of Allis-Chalmers tractors until today the modern Baker bulldozer is the ultimate in serviceful, low cost, easy-to-maintain earth moving equipment. Now, as always, there is a Baker bulldozer and gradebuilder for every model of Allis-Chalmers crawler tractor — described in Bulletin 839. Bakers are sold exclusively by Allis-Chalmers tractor dealers *everywhere.*

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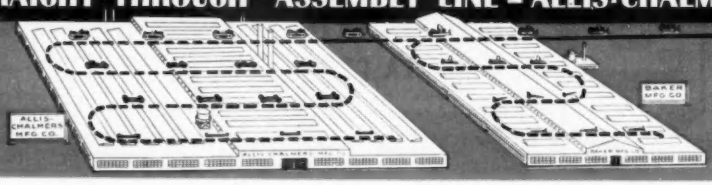
If it Concerns Victory, it concerns us!

"STRAIGHT THROUGH" ASSEMBLY LINE – ALLIS-CHALMERS TO BAKER TO YOU!



The modern Baker plant with its completely equipped fabricating, machining and blacksmithing shops adjoins the Allis-Chalmers crawler tractor plant. When you order an A-C tractor with Baker bulldozer or gradebuilder, your tractor leaves the A-C assembly line, crosses a narrow court and goes on the Baker final assembly line.

SAVE ON ROPE COSTS
WITH
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Built specially by LeTourneau for LeTourneau cable-operated units... Tournarope can be used on tractor equipment of any make. It's a preformed tight-wound rope of specially tough flexible steel, is designed for smooth spooling on the small drums of a PCU, flexes easily over tractor equipment sheaves, and stands up against the dust and grit of dirtmoving service.

To save rope costs on your tractor equipment — use Tournarope!

SIX SIZES—⅜", ½", 9/16", ⅝", ¾" and ⅞".

SEE YOUR

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Westinghouse Electric and Manufacturing Company, said:

"For 1945 there is expected a decline from 1944 of about 13 per cent in total industrial construction, from an estimated 845 million dollars to a projected 735 million. This results from a year-to-year decline of 59 per cent in publicly-financed industrial construction, largely offset by a thumping 171 per cent gain in new, privately-owned plants."

• Coast Guard uses Bucyrus-Erie Dozershovel to pull heavy fighting material down the ramp of a landing craft at Eniwetok. Mountains of supplies lie on the beach.
U. S. Coast Guard Photo

Award Savage John Fritz Medal for Work on Dams

John L. Savage, chief designing engineer of the Bureau of Reclamation, Department of the Interior, will be awarded the John Fritz Medal at the annual meeting in January of the American Society of Civil Engineers.

Mr. Savage, now in the Orient, plans to return to the United States as soon as he has completed his work as special consultant on irrigation problems in India and China.

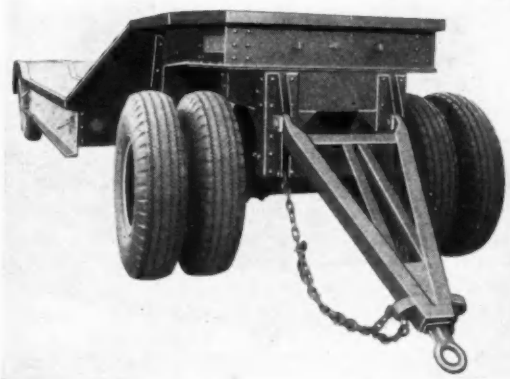
The medal to be conferred on Savage carries with it the citation "for superlative public service, in conceiving and administering the engineering of mammoth dams, both in America and beyond the seven seas."

Mr. Savage began working for the Bureau of Reclamation in 1903, soon after he was graduated from the University of Wisconsin. With the exception of eight years in consulting practice with the late A. J. Wiley in Boise, Idaho, he has spent his entire career in public service. In 1924 he was appointed chief designing engineer for the Bureau of Reclamation.

Boulder, Grand Coulee, and Shasta head the list of more than 60 dams which Savage has designed for the Bureau of Reclamation. He also supervised the design of Madden Dam in the Canal Zone and Norris and Wheeler Dams of the Tennessee Valley Authority. As a consultant on major irrigation developments in Mexico, Puerto Rico, South America, Australia, India, and China, Savage is internationally famous.

• John L. Savage (left), chief designing engineer of the Bureau of Reclamation, Department of the Interior, winner of this year's John Fritz medal, looks over postwar construction plans with Commissioner Harry W. Bashore.

LA CROSSE
BOW BOYS



LA CROSSE TRAILER & EQUIPMENT COMPANY

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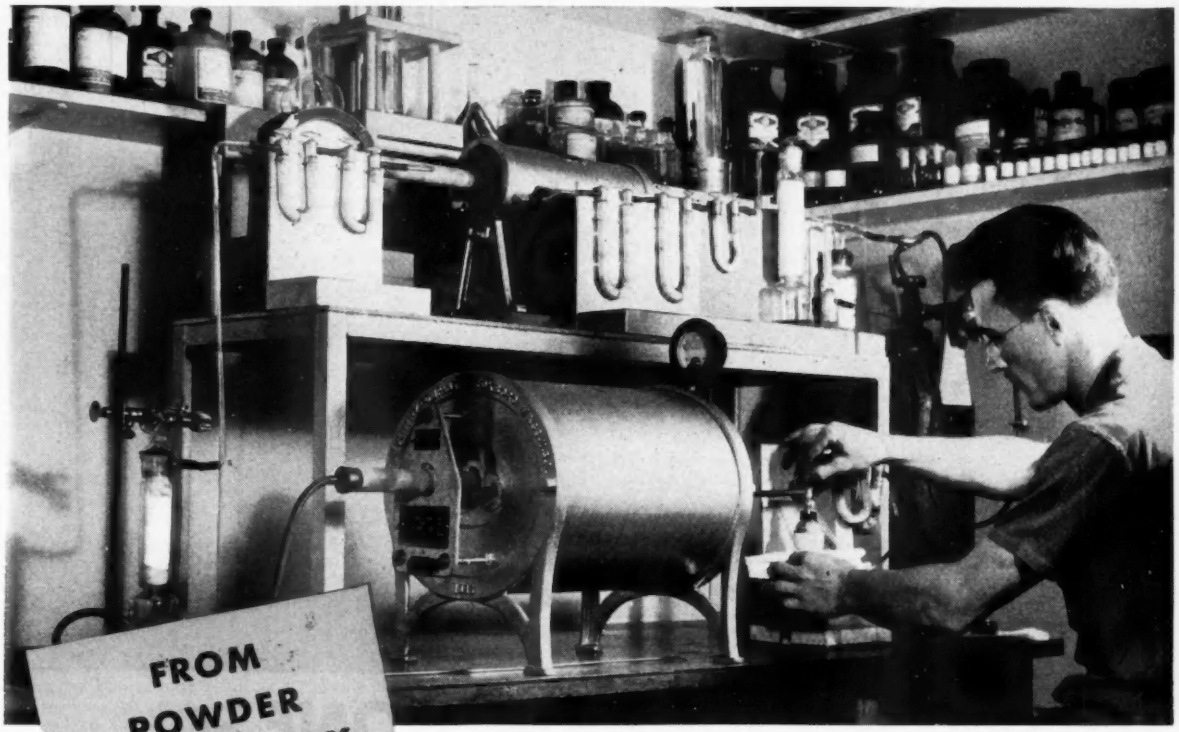

FROM POWDER METALLURGY HEADQUARTERS

This unique apparatus, developed in The S. K. Wellman Company laboratories, measures minute quantities of oxygen in powder metal formulas.

. . . come better friction materials

● In the world's largest laboratory devoted to friction materials, we are constantly finding ways to produce *better* clutch facings and brake linings. That's why Velvetouch has established so many enviable records for long wear and smooth operation in all types of earth-moving equipment. If you have not recently used Velvetouch, specify this all-metal friction material for your next brake or clutch overhaul.

THE S. K. WELLMAN COMPANY

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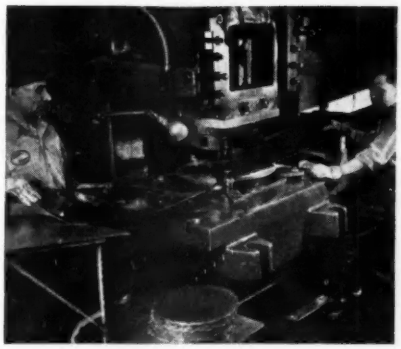
Velvetouch is *all metal*—a combination of powdered metals, compressed, sintered and welded to a solid steel backing.

For Brake and Clutch . . . Use Velvetouch

The "INSIDE STORY" of POWDER METALLURGY



CHAPTER II. For maximum strength and heat conductivity, the powdered metal friction materials are firmly bonded to steel backing plates. Photo above shows steel "cores" being stamped out for Velvetouch facings.

President Signs Highway Act For Postwar Era

The Federal-Aid Highway Act of 1944, approved by the President recently, marks the beginning of a new period in highway development in the United States, according to Thomas H. MacDonald, Commissioner of Public Roads. It provides $500,000,000 for construction of highways in each of the first three post-war years and requires the designation of two new highway systems in addition to the existing Federal-Aid system.

One system is to be the National System of Interstate Highway connecting the principal metropolitan areas, cities and industrial areas and to serve the national defense and is not to exceed 40,000 miles in extent. The other system is to consist of the principal secondary and feeder roads, including farm-to-market roads, rural free delivery mail and public school bus routes, either outside or inside municipalities of less than 5,000 population.

The annual authorization of $500,000,000 is assigned as follows: $225,000,000 for the Federal-aid system, $150,000,000 for secondary or feeder roads, and $125,000,000 for the Federal-Aid highway system in urban areas. Since the new National interstate system is to be included in the Federal-aid system, both the $225,000,000 and the $125,000,000 will be available for expenditure on this system.

The funds for the Federal-aid system are to be apportioned among the States, one-third in proportion to area, one-third in proportion to population, and one-third in proportion to mileage rural free delivery and star routes. The funds for secondary or feeder routes are to be apportioned according to the same formula, except rural population (includes population in places of less than 2,500) will be substituted for total population. In the above apportionments no State is to receive less than one-half of one per cent of the funds. The funds for urban projects on the Federal-aid system are to be apportioned in proportion to population in urban places of 5,000 or more. The law

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A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.
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A Time-Saving ACCESSORY
Beco BLOCKS & LININGS
Beco Blocks and Linings take the heavy loads at the increased speeds demanded of modern excavating equipment. These Beco products are durable and tough — that's why replacements and adjustments are less frequent.
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Just ONE of 109 types and sizes
BLAW-KNOX BUCKETS

So many things affect the efficient performance of a bucket . . . material to be handled, hook capacity, side and head clearance, etc.

To meet exacting specifications Blaw-Knox has designed and built over 100 different types and sizes from which you can select a bucket exactly right for the job in question. One that gets more work done with less crane time.

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Representatives in Principal Cities

HERE'S QUICK INFORMATION

Bulletin 1989 classifies and illustrates the Blaw-Knox buckets most widely used by railroads—from ash pits to river-rail transfers. Your request will bring a copy by return mail.

• **British-manned Caterpillar tractor with LaPlant-Choate bulldozer filling in and leveling bomb crater on an airfield in Western England.** *Acme Photo*

does not specify any minimum amount to be received by a State.

Funds for the first postwar fiscal year are to be apportioned within 30 days after approval of the Act but, with the exception of $100,000,000, may not be used in payment on construction contracts entered into before proclamation by the President of termination of the emergency or authorization by concurrent resolution of the two Houses of Congress. To permit the making of surveys and plans for the large program authorized the Act provides that $100,000,000 of the funds for the first year may be appropriated and become available immediately upon apportionment.

The large highway program authorized is to be carried on under the long-established plan of cooperation between the States and the Federal Government in constructing the Federal-aid system. Under this plan the State Highway departments are responsible for initiation of projects, preparation of plans, letting of contracts, and supervision of construction. The Public Roads Administration of the Federal Works Agency is responsible for administration of the program and all steps are subject to its approval. The law provides that it may enter into contracts only with the State highway departments.

The routes of the National system of interstate highways are to be selected by joint action of the State highway departments of each State and the adjoining States following the procedure used in designating the Federal-aid system. Each State will be responsible for initial designation of the sections of the system within its borders and the State designations will be coordinated into a National system, possibly through group and regional meetings of State highway departments with representatives of the Public Roads Administration. Limitation of the National system of interstate highways to 40,000 miles will permit inclusion of only the most important main highways.

The system of secondary or farm-to-market roads is to be selected by the State highway departments in cooperation with the county supervisors, county commissioners, or other appropriate local officials and the Commissioner of Public Roads. Carrying out the provision of the new Act will require a closer cooperation between State and county officials than has heretofore existed in many States, according to Commissioner MacDonald. Cooperation will also be required with various city agencies in constructing the express routes of the interstate system through cities.

The following exceptions in the use of secondary road funds are likely to be applicable in only a few States: (1) In any State having a population density of more than 200 per square mile, the State highway department may select the secondary or farm-to-market system without regard to municipal boundaries, provided such procedure is approved by the Commissioner of Public Roads; (2) In any State having all public roads under the control of the State highway department, and where the State highway department and the Commissioner of Public Roads agree that secondary road funds are not needed on secondary roads, such funds may be expended on the Federal-aid system.

In general the Federal Government is to pay 50 per cent of the cost of highways including surveys, preparation of plans and construction costs. Greater participation is permitted in the public land States, the increase in percentage of participation being one-half the percentage of land in the State held as public land. A new and important feature is the provision that Federal funds may be used to pay one-third the cost of right-of-way.

Not more than 10 per cent of any of the funds authorized may be used to pay the full cost of the elimination of hazards at railroad grade crossings with the exception that Federal participation in cost of right-of-way on grade-crossing elimination projects is limited to 50 per cent of the cost to the public. The railroads are required to pay the United States for net benefits received from the elimination of hazards at crossings. The amount to be paid is limited to 10 per cent of the cost.

Previous Federal highway policies are continued by authorizations for each of the first three postwar fiscal years as follows: $37,500,000 for roads in national forests; $4,250,000 for roads in national parks and monuments; $10,000,000 for parkways to give access to national parks and monuments, or to become connecting sections of a national parkway plan; and $6,000,000 for roads in Indian reservations.

Egypt Planning Post-war Highways

A post-war road program for Egypt costing 15,000,000 pounds provides for highways to link the main towns in the Nile Delta with North Africa as far west a Casablanca. One of the most important roads will run from Alexandria to El-Arish on the Egypt-Palestine border. Another road will link Dessuk, on the western branch of the Nile with Sherbin, a road distance of 175 miles.

Loads of Rock Over Roads of Rock

LINN HAFTRAKS, with Contour-following Traction, move 8 yard loads of asbestos rock over 25 per cent grades.

THE LINN MANUFACTURING CORP. **Morris, N. Y.**

Construction Machinery Orders and Shipment

Products	Shipments Third Qtr. 1944	1943	Unfilled Orders End 3rd Qtr. 1944	1943	Number Companies Reporting	Approx. % of Industry Covered
Graders	1,319	1,458	5,279	4,965	6	100
Angledozers, Bullgraders and Bulldozers	8,406	4,120	30,010	14,492	20	100
Cranes and Shovels, Power	2,520	1,928	—	—	28	100
Road Rollers	746	724	2,492	2,823	11	100
Hauling Scrapers	1,383	1,511	3,522	1,124	13	100
Contractors' Concrete Mixers	878	471	—	—	9	100
Contractors' Concrete Mixers, Truck Mounted	51	87r	—	—	3	100
Bituminous Heating Kettles	845	790	—	—	13	100
Contractors' Pumps	13,773	8,415	—	—	17	100
Cranes and Shovels, Tractor Mounted	2,576	1,115	4,646	7,524	29	100
Snow Plows	179	600	1,047	3,053	26	100
Trenching Machines	328	138	—	—	6	100
Street Sweepers	288	460	325	887	10	100

• Data for the Third Quarter, 1944 on shipments and unfilled orders for 13 kinds of construction machinery in comparison with similar data for the Third Quarter, 1943.

HAISS
HI-POWER
...Digging Buckets that reeve up to 7:1 closing ratio...with the heaviest of jaw plates, and teeth in proportion ...to stand up to the worst of work conditions. Make it a Haiss next time!
Jeepers! with a grip like that, a boulder ain't got a chance!

GEORGE HAISS MANUFACTURING CO., INC., 144th St. & Park Ave., New York 51, N. Y.
Bucket agencies throughout the country. Write, wire for prices, delivery or catalogs.

OBITUARIES

O. N. Floyd

O. N. Floyd, 66, civil engineer and national authority on earthwork dams, died of a heart attack at his home in Dallas, Texas, on November 30.

Mr. Floyd's work on dams was well known throughout the south and he had been selected by the United States to represent this country in postwar reconstruction work in foreign countries. He was supervisor of Lake Dallas Dam, had worked on Denison Dam, and was a member of the board of consultants selected by the government to aid Denton District Army Engineers. He had also been a consulting engineer for the TVA project in Tennessee and Alabama, and had recently toured Canada and Alaska inspecting the Canol oil project. He had been called twice to Panama for consultation.

He was a member of the board of directors of the Callahan Construction Company, a member of the American Society of Civil Engineers and a member of the Technical Club of Dallas. Mr. Floyd was active in civic work and was an elder of the Central Christian Church. He also served on the board of directors of the Y.M.C.A.

Mr. Floyd was born in Columbia, Tenn., and lived about a year in Wichita Falls before coming to Dallas 21 years ago. He graduated with a degree in civil engineering from the University of Tennessee in 1905.

He is survived by his widow, Alice Hofrichter Floyd; a daughter, Miss Lois Jean Floyd of Troy, New York; a sister and two brothers.

Two Prominent New York Engineers Die Same Week

Two prominent New York engineers, who had been connected with major tunnel and other construction projects, died recently in the same week.

They were Alf Hjort, 67, for the last 15 years chief engineer of George H.

(Continued on page 40)

Bulky, cumbersome machinery, and of late heavy pieces of defense equipment must be moved from place to place.
In some localities, where low headroom is encountered, this type of Rogers Trailer is used extensively.
Large machines, with crawler treads "straddle" the girders thus lowering the overall height by several inches, a definite advantage also in handling many kinds of equipment.

ROGERS BROTHERS CORP., ALBION, PENNA.

ROGERS LOW BED- HEAVY DUTY TRAILERS

BUY OIL—

Investigate this Complete Lubrication Service—

OCONY-VACUUM'S practical aid to contractors goes r beyond mere lubrication of equipment. *It's the kind at helps save man-hours on the job—speeds contract mpletion!*

First of all, you get fine products—a complete quality ne backed by 79 years of refining experience. Whether ou operate 6 or 60 pieces of equipment, we can satisfy ll of your fuel and lubrication requirements. *And we eet those requirements right out on the job!*

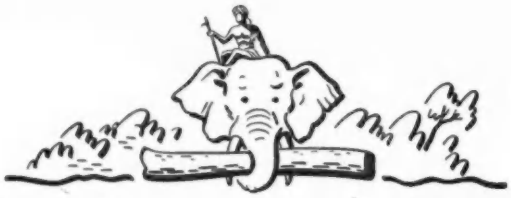
We assign a Socony-Vacuum representative to work with you—make recommendations after careful study of your equipment and job problems. You get engineering aid—tested Socony-Vacuum maintenance schedules that help cut out-of-service time . . . keep machines operating at maximum efficiency and economy!

Take advantage of these proved time-saving methods. Call in Socony-Vacuum today!

"ON YOUR STAFF — BUT NOT YOUR PAYROLL" — Your Socony-Vacuum Representative

SOCONY-VACUUM OIL CO., INC. and Affiliates:—
Magnolia Petroleum Co., General Petroleum Corp. of Calif.

CORRECT LUBRICATION FOR EVERY PART OF EVERY MACHINE YOU OPERATE . . .
PLUS
1 ENGINEERING HELP on time-losing operating problems; 2 TESTED MAINTENANCE SCHEDULES that minimize service man-hours—keep equipment on the job;
3 PROMPT, DEPENDABLE DELIVERY—a reliable, on-the-job service that eliminates inventory problems for you!



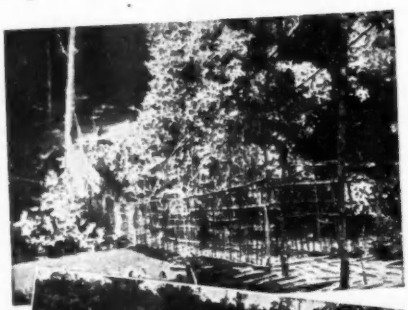
INDIAN TRAIL TO TOKYO

Rugged OSGOODS and Native Labor Help Army Engineers Blaze Vital Chinese Supply Line Through Burma.

U. S. Army supply lines are inching their way across the dense jungles of northern Burma along a route known as the Ledo Road. The ultimate terminus for which our engineers are fighting and sweating, digging and building is . . . Tokyo.

Helping to clear the way and move the dirt along this virgin trail are husky, mobile OSGOOD Shovels. It's a tough job; as tough a test as you'll find for ingenious men and machines. That OSGOOD'S measure up—here as well as in battle areas all over the map—is a good thing to remember.

For some day your money, now invested in War Bonds will be buying new equipment, and when that day comes OSGOOD power, maneuverability and durability will be ready to deliver the proven performance you want for your jobs!



Army Signal Corps and OWI Photos

Ledo Road to China—through tangled jungle, over innumerable rivers, streams and chasms, and blasted out of tree-covered hillsides—will in due time carry Allied supplies for the storming of Tokyo.

THE GENERAL EXCAVATOR COMPANY
GENERAL CRANES, DRAGLINES AND SHOVELS
DIESEL, GAS, ELECTRIC

Associated with The General Excavator Company

OSGOOD

THE OSGOOD COMPANY • MARION, OHIO

OSGOOD SHOVELS, DRAGLINES CRANES
CRAWLER & WHEEL MOUNTS
DIESEL, OIL, GAS, ELECTRIC

OBITUARIES

(Continued from page 36)

Flinn Corp., who died December 12, and Ralph M. Burkhalter, 58, chief engineer of the Poirier & McLane Corp., who died December 14.

Born in Maquon, Ill., Burkhalter was graduated from the University of Illinois Engineering School in 1907. He was one of the early specialists in the compressed air method of tunnel construction, and played a part in the construction of many of the major highways and projects in the New York metropolitan area, including the Holland Tunnel, Triborough Bridge, West Side Highway, East River Drive, Pennsylvania Railroad tubes, Catskill aqueduct and others. During the present war he had been in charge of work on the Kandaia Munitions Depot at Geneva, N. Y.

Surviving are his wife, Mrs. Anne H. Burkhalter; a daughter, Gretchen Burkhalter; a son Pfc. William L. Burkhalter; a sister, Claudia Burkhalter of Peoria, Ill., and a brother, W. E. Burkhalter of Portland, Ore.

A native of Oslo, Norway, Mr. Hjort was graduated from Technische Hochschule in Berlin, a state polytechnic academy. After coming to the United States in 1903, he was employed from the following year to 1909 by Pearson & Co. as chief electrical engineer on the Pennsylvania Railroad tunnel under the Hudson River and the Long Island Railroad tunnel under the East River, both completed in 1909. In 1909 he joined the Begnon Contracting Co. and worked for two years on the Catskill water supply project.

Mr. Hjort had been with the Flinn Corp. since 1911, becoming its chief engineer in 1929. During this period, he worked on subway contracts in Manhattan, Queens and the Bronx, the Montague and Clark St. tunnels, the Holland Tunnel, the Bayonne naval drydock and the Battery-Brooklyn tunnel which will not be completed until after the war. He was a member of the American Society of Electrical Engineers, Municipal Engineers, the Moles, and the American Society of Military Engineers.

Surviving are his wife, Mrs. Maria Schultz Hjort, and a son, Alf Hjort, Jr.

UNSUNG STARS OF A FIGHTING TEAM

MEN who know their jobs and do them with outstanding effectiveness — this description fits not only our incomparable fighting men but equally the men who operate excavating equipment on the fighting fronts. Skilled in excavation, they give to their brothers in combat the help they need to win more quickly, playing superbly their positions on an invincible fighting team.

Of them and of the significance they have given to excavators in war, Bucyrus-Erie is proud. It is proud, too, that so many of the machines at the fingertips of these skilled men are speedy, smoothly-performing Bucyrus-Eries—as always, leaders in their field.

V-62C

Ammunition carefully swung down with the accurate control of a 15-B crane in France.

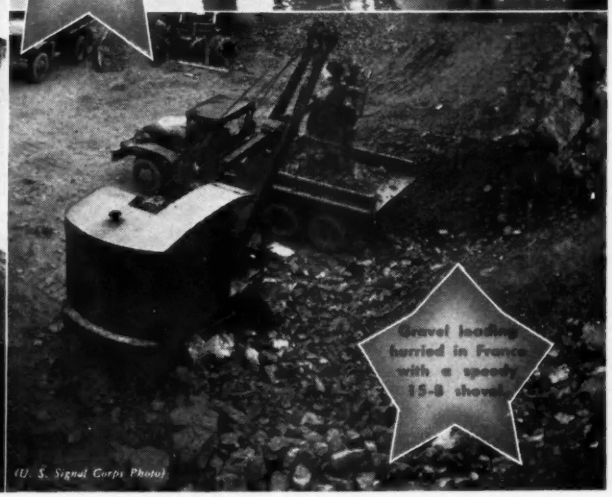
(U. S. Signal Corps Photo)

In England Engineers work with a 15-B pile driver.

(U. S. Signal Corps Photo)

A U. S. Engineer uses a 54-B shovel to dump spoil material on the beach at Amchitka.

(U. S. Army Engineer Photo)



Gravel loading hurried in France with a speedy 15-B shovel.

(U. S. Signal Corps Photo)

BUCYRUS ERIE

South Milwaukee, Wisconsin

NOT in the Contract

A young banker picked up the telephone in his office: "No," he said, "No, no, no. YES. No, no." With a final explosive "NO," he hung up.

The head of the firm, who had been listening, asked him sternly, "What was the idea of saying 'yes' to that fellow?"

"I had to, boss. He asked me if I could hear him."

Order received by transport sergeant:

Four trucks to be ready at 1930 hours for conveying girls to dance. The bodies must be cleaned and seats wiped off. All curtains in place.

"My, what a strange looking cow!" exclaimed the sweet young thing from Chicago, "but why hasn't she any horns?"

"Wal, you see," said the farmer patiently, "some cows we dehorn, and some cows is born without horns and never has 'em, and some cows shed 'em. There's lots of reasons why some cows ain't got horns. But the reason that cow ain't got horns is she ain't a cow . . . she's a mule."

One day two pretty young girls in a street car were discussing their favorite operas. Just as the conductor came up one of the girls said: "I simply love 'Carmen'."

The conductor blushingly whispered: "Try the motorman, miss. I'm married."

Bill was limping badly. "What's up," asked the foreman, "hurt yourself?"

"No; got a nail in my foot," replied Bill.

"Why don't you take it out then?" asked the foreman.

"What—on my lunch hour?"

Excerpts from the diary of a female voyager:

Monday: "Was flattered to be placed at the captain's table."

Tuesday: "Spent the morning on the bridge. The captain seems to like me."

Wednesday: "The captain's proposals are unbecoming to an officer and a gentleman."

Thursday: "The captain threatens to sink the ship if I do not agree to his proposal."

Friday: "I have saved 600 lives."

Pete: "So your wife came to you on her knees last night?"

Dave: "Yes, and dared me to come out from under the bed."

A soldier got a letter from his wife containing a sketch of their car's instrument panel. "This is the exact way the dashboard looks," she wrote. "Do we need a quart of oil?"

Pat: "I married six old maids."

Mike: "Say, do you know what that's called?"

Pat: "Sure do, everybody says it was big of me!"

"Mary, have you ever awakened in the morning with a grouch?"

"Gracious, Betty! You know I've never been married."

A little girl was seated on the front porch when the salesman approached the gate. He tried to open it but it stuck.

"Mother at home, little one?" he inquired before making further attempts to enter the yard.

"Yes, sir, she's always at home," said the child.

The agent jumped the gate and rang the doorbell. There was no response. He rang it several times more, and waited. The door remained closed. Somewhat vexed, he turned to the child and asked: "Didn't you say your mother was home?"

"Yes, sir, and I'm sure she is," replied the youngster.

"Then why doesn't she answer my ring, I wonder."

"I think she will, sir, when you reach our house," came the prompt reply. We live four doors down the street."

Engineer: What was one of the greatest obstacles in the building of the Panama Canal?

Shovel Operator: Dirt.

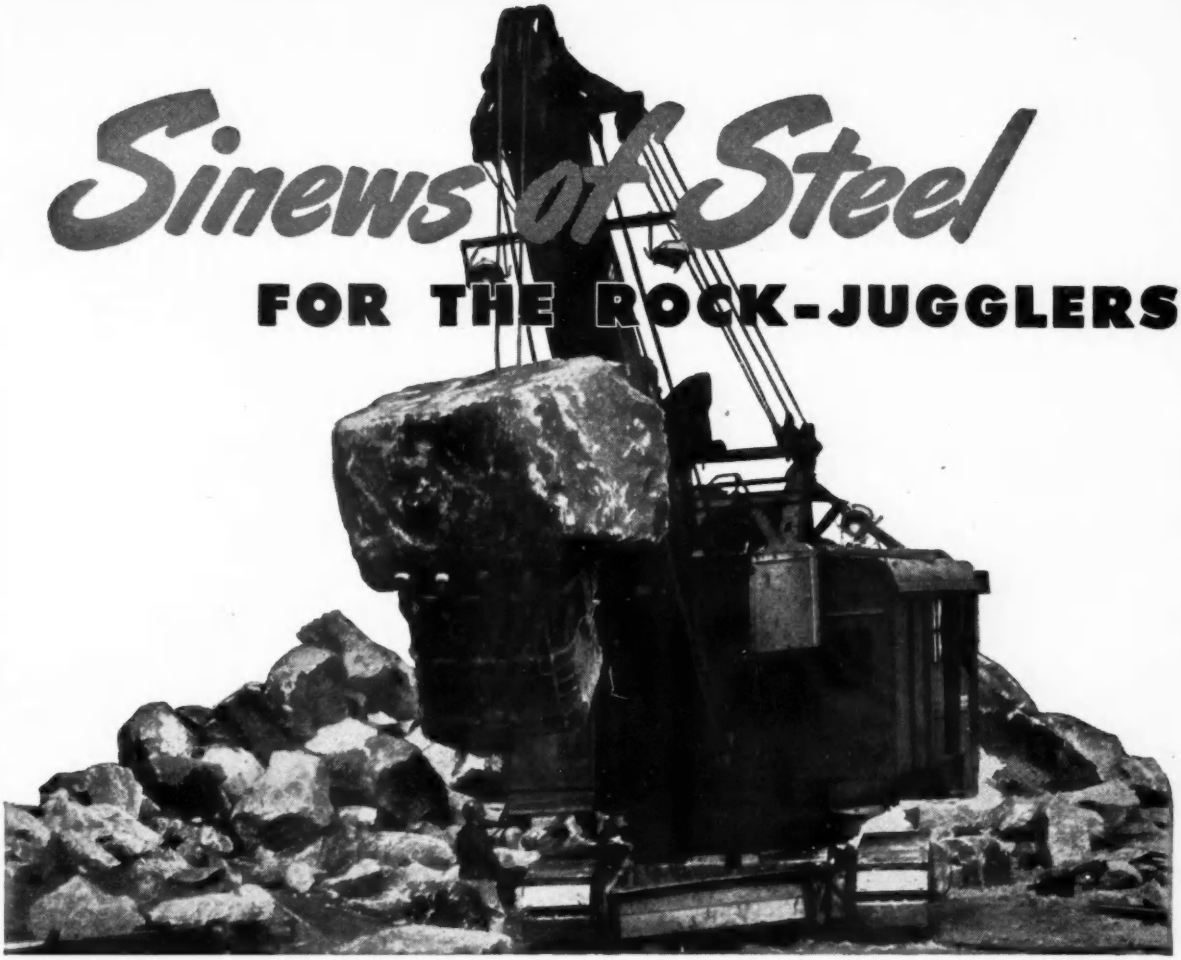
Judge: "Why did you strike this dentist?"

Prisoner: "Because he got on my nerves."

"Do you think he could do better with one of those bombsights?"

Sinews of Steel

FOR THE ROCK-JUGGLERS



The stone you see poised on the dipper weighs more than two tons per cubic yard. Yet the powerful shovel seems to handle it like a pebble.

The shovel in the picture was delivered equipped with Bethlehem Wire Rope. It's a bread-and-butter application . . . nothing spectacular, but one that demands the best wire rope you can buy. When a shovel is rigged with Purple Strand (Bethlehem's top-grade rope), its lines are equipped to withstand the grief that's a daily feature of quarry and excavating work.

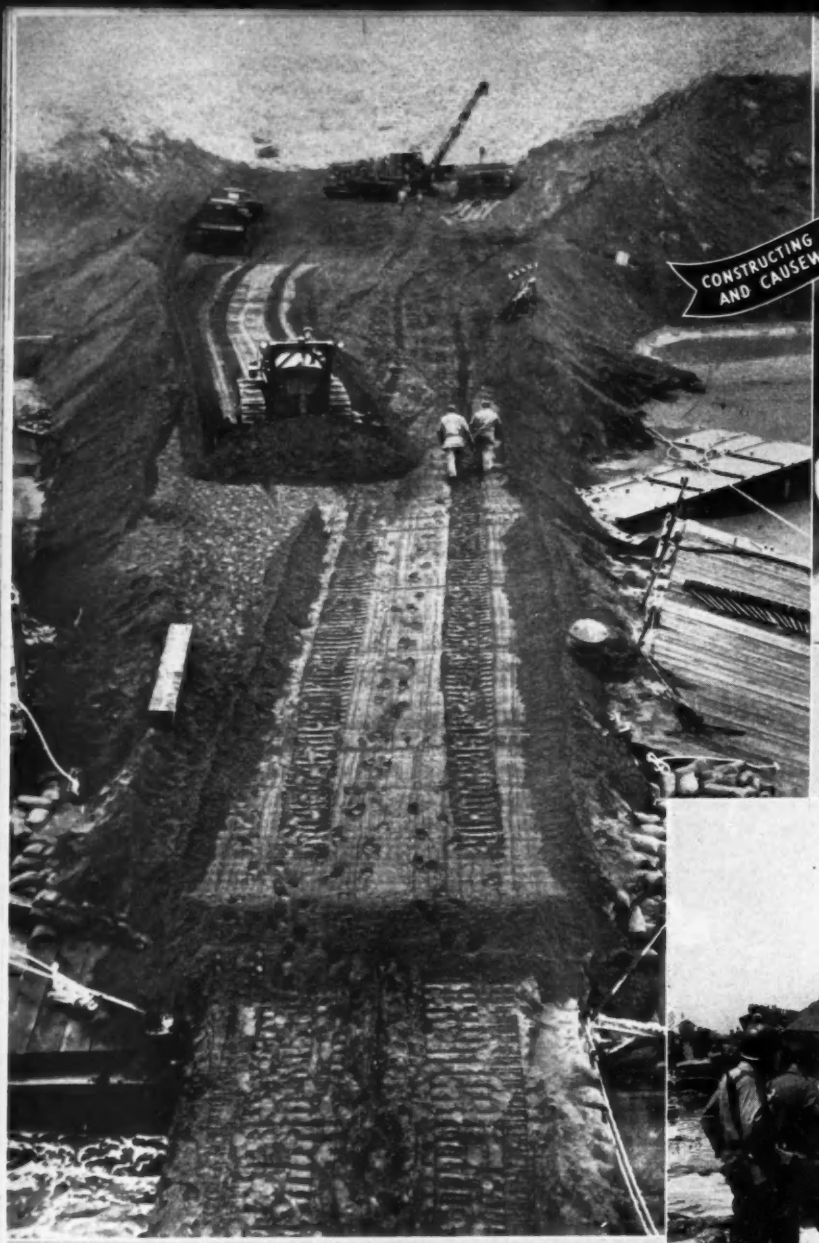
If your job calls for a highly flexible rope, designed for easy curving around sharp bends, ask for Purple Strand Form-Set. A Form-Set rope is one that's been preformed; relieved of internal tension that sometimes shortens working life. But increased life is not the only advantage. Preformed rope is relaxed, supple; it's easy to handle, easy to rig, easy to spool.

Bethlehem craftsmen are old, experienced hands at wire-rope making. And Bethlehem representatives are thoroughly familiar with conditions in the field, so that their recommendations are well worth considering. Before you rerig your shovel, derrick, or crane, see one of our men. Some of his tips may save you time and money.

When you think WIRE ROPE

. . . think BETHLEHEM

CONSTRUCTING RAMPS AND CAUSEWAYS



• Caterpillar tractor with LeTourneau bulldozer constructing operational ramp on Attu.

Navy Photo

• While the first wave of U. S. and New Zealand infantrymen wade ashore on Green Islands, Allis-Chalmers tractors and Baker bulldozers build up a causeway to an LST vessel to facilitate the landing of trucks and supplies. *Marine Corps Photo*

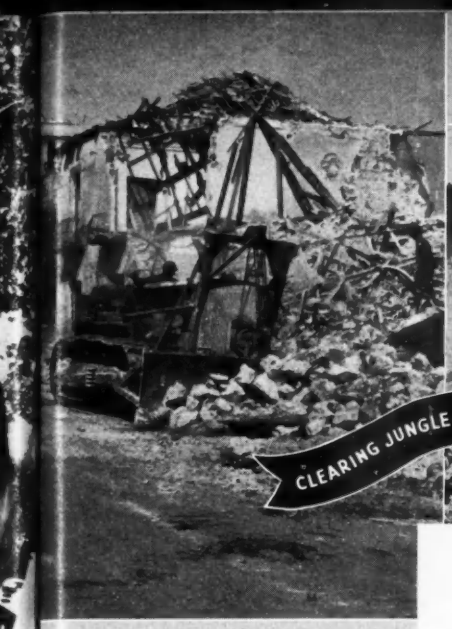
• Even a bulldozer can get under the conditions that South Pacific landings are made armored LeTourneau bulldoze Caterpillar tractor will soon b on this island, Morotai, one Halmahera group. Since ther only slight resistance on this bogged-down equipment was to the beach without loss.

Signal Corps

PULLING OUT BOGGED-DOWN EQUIPMENT

• International tractor with Bucyrus-Erie 'dozer comes to the rescue of a weapon carrier that encountered difficulty unloading the Signal Corps laboratory trailer from an LST during a landing in the South Pacific.

Signal Corps Photo



• Clearing main street of Battipaglia, Italy, of rubble with a LeTourneau bulldozer. *Signal Corps Photo*

• LaPlant-Choate bulldozer clears debris as Engineers reconstruct bridge demolished by retreating Germans in Sicily. *Signal Corps Photo*

• U. S. Engineers use this Caterpillar diesel tractor with LaPlant-Choate 'dozer to clear debris on the bomb-blasted piers of docks somewhere in Italy. *Signal Corps Photo*

• Looking more like a tank than a 'dozer this airborne armored LaPlant-Choate helps to demolish these battle-scarred walls in a French city. *Signal Corps Photo*

Battling Bulldozers

(Continued from page 19)

industry knew before the war proved the fact to the world that bulldozers were "handy men" that could be depended upon for any number of jobs, they did not visualize what an important part this ungainly, unstreamlined, non-stoppable piece of construction equipment would take as an offensive weapon. This is fully realized now for such an authority on the subject as General George S. Patton, Jr., has stated that if he had to choose between bulldozers and tanks for an invasion, he would choose the bulldozers every time.

Similarity of Work

Some of the jobs that bulldozers are doing at war are essentially the same as pre-war jobs they were doing — landing supplies; building revetments and ammunition dumps; clearing land for roadbuilding, airfields, campsites, and agriculture; grading for roads and airfields; cleaning up rubbish of battle such as destroyed buildings and wrecked roads; digging drainage ditches, trenches and artillery emplacements; making tank traps; constructing docks and dams, and caring for garbage and sewerage disposal.

Some uses to which bulldozers are being put as an offensive weapon are: flushing snipers, clearing out pillboxes, breaking openings through barbed wire entanglements, burying enemy dead, and acting as a shield for advancing troops. And even some of these offensive functions have their counterpart in former peace-time jobs done by bulldozers.

There are many other uses to which the bulldozer has been put in this war, and undoubtedly there will be many more new uses discovered for this equipment which has been called "a basic American weapon" by Major-General Eugene Reybold, Chief of the Corps of Engineers, Army Service Forces.

• French road is cleared of wreckage of German truck by this LeTourneau 'dozer on Caterpillar tractor fitted with an operator's cab protected by armor plate. *Signal Corps Photo*

• Bucyrus-Erie 'dozer scoops out a trench along a beach road on Saipan in preparation for the mass burial of dead Japs whose bodies lie along the road and in the field at the right. *Press Association, Inc.*

ERIE BUCKETS

THE COMPLETE LINE

Hundreds of Erie Buckets are being shipped monthly for war uses. Straight line bucket production experience means better buckets for post-war and fast delivery. Investigate the complete Erie line now.

ERIE STEEL CONSTRUCTION CO · ERIE, PA.

AggreMeters · Buckets · Concrete Plants · Traveling Cranes

To Save TIRES also Protect TRUCKS AND TRAILERS

GATKE
BRAKE BLOCKS and LINERS

Custom-Bilt **for the JOB**

GATKE Brake Blocks and Liners are made for all requirements of Trucks, Tractors, Trailers and other Heavy Duty Equipment.

For *War Essential Conservation* of Tires and Equipment, you need *these extra performance qualities* of GATKE *CUSTOM-BILT* Brake Blocks.

Smooth, *non-grabbing* action that *adds miles* to tire life and *avoids strain* on men and equipment.

Dependable stopping power for emergencies under all service conditions.

Long wear life that avoids frequent adjustments and saves maintenance.

Comparison is the test. Until you've used GATKE Brake Blocks, *CUSTOM-BILT for the job, you can't begin to appreciate the marvelous improvements they offer.*

Ask your GATKE Jobber or write.

GATKE CORPORATION

HEAVY DUTY BRAKE BLOCK DIVISION

232 N. La Salle St. Chicago, 1, Ill.

Notes from the manufacturers

James W. Bell Company of Cedar Rapids, Iowa, announces that Paul J. Sullivan, who was associated with Brandeis Machinery & Supply Company of Louisville, Kentucky, has been appointed general manager.

Pioneer Engineering Works, Inc., Minneapolis, Minn., announces the appointment of Martin-Roasa Tractor and Equipment Company of Cedar Rapids, Iowa, as distributor for the territory of eastern Iowa and ten counties in northeastern Missouri.

Gar Wood Industries, Inc., of Detroit, Mich., has promoted Amos E. Heath to the new position of General District Manager of Washington and the Central Seaboard District.

Fruehauf Trailer Company of Detroit, Mich., through A. K. Tice, Director of Sales, announces the appointment of E. E. Springer as Regional Manager in the Southeast. Mr. Springer will have 12 branches under his supervision and will make his headquarters at the Charlotte, North Carolina Branch.

The company also announces that H. F. Howard, formerly General Plant Manager of Chevrolet Factories in Flint, Michigan, will be in charge of manufacturing operations at the Fruehauf plants.

A. R. (Bob) Thomson has become associated with Lyle Hosler Advertising Agency in Peoria, Illinois. He was Advertising and Sales Promotion Manager of Schramm, Inc., before joining with R. G. LeTourneau in the capacity of Assistant Advertising Manager. Prior to joining the Hosler Agency, he was Director of Sales, Service and Factory Training Divisions for LeTourneau.

Trackson Company of Milwaukee, Wis., announces receipt of a second white star to their Army-Navy "E" flag.

Le Roi Company of Milwaukee, Wis., has advanced Norman M. Sedgwick to the position of Manager of Compressor Sales to succeed Donald Heffron who has resigned for another line of work.

Tyson Bearing Corporation of Massillon, Ohio, elected Hamilton O. Penn of New York to a directorship recently. Mr. Penn heads the H. O. Penn Machinery Company of New York, is executive Vice-President of the Associated Equipment Distributors of America, and is a member of the Moles.

The Tyson Bearing Corp. has de-

cleared an initial quarterly dividend of 12½ cents a share on the common stock payable December 28 to stockholders of record December 18. For the nine months ended September 30, 1944, net income of $256,718 equal to $1.49 a share on 168,853 shares of common stock outstanding. This compares with $204,004 or $1.19 a common share in the corresponding period of 1943.

New trade literature

Title: **"Production with Rear Dump Euclids".**

Subject: This photographically illustrated, handsome 24-page book shows Euclid rear-dump trucks in operation on various types of jobs in this country and abroad. Quotes many job figures and production records on iron ore mining, strip mining, limestone quarry, anthracite overburden, titanium ore, aggregate production and other materials moving jobs on which Euclid trucks were used. Several pages suggest new operating methods for off-the-highway truck service.

Where to Get: The Euclid Road Machinery Co., Cleveland 17, Ohio. (Free)

Title: **"Audels Pumps, Hydraulics, Air Compressors".**

Subject: A comprehensive guide on pump, hydraulic and air problems for engineers, operators, mechanics, students. Fully illustrated, 1658 pages, with questions and answers. Three books in one. Completely covers practical information on every type of pump—carries 320 pages on hydraulics and 406 pages on air compression. Has 24 pages in its ready reference index.

Where to Get: Theo. Audel & Co., 49 West 23rd St., New York, N. Y. ($4.00)

Title: **"Manganese Steel in Dredge Operation".**

Subject: A 56-page fully illustrated

"HERCULES" (Red-Strand) Wire Rope

DESIGNED *for your* HEAVY DUTY JOBS

"HERCULES" is our trade name for the very best heavy duty wire rope that we are able to produce. Best in quality . . . best in design . . . best in fabrication. So that it can be recognized by sight, it is always made with one Red Strand.

As "heavy-duty" service covers a wide range of working conditions, this wire rope is manufactured in numerous constructions, as illustrated above. Most of these constructions can be furnished in either a hamp center, a wire rope center or a metallic core.

Preformed: "HERCULES" Red-Strand Wire Rope is furnished either Preformed or Non-Preformed. Under any conditions, the Preformed is easier and quicker to install and safer to handle. For most purposes it is decidedly longer lasting.

In "HERCULES" there is a *Right* rope for every heavy-duty purpose. You will make no mistake if you let the Red-Strand be your Wire Rope Guide. Its use will help you save time . . . reduce operating cost . . . increase safety.

Maximum wire rope efficiency is obtained only when the rope used is of the construction, grade and type best suited to the particular conditions under which it is to work. Ability to make proper selection comes with experience. We shall be glad to have you consult with us on any wire rope problem you may have.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
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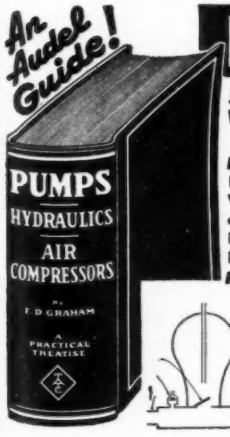
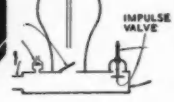
An Audel Guide!





PUMPS-HYDRAULICS-AIR COMPRESSORS

JUST OUT! 3 BOOKS IN ONE—OVER 1650 PAGES, 1654 ILLUSTRATIONS, WITH QUESTIONS AND ANSWERS. COMPLETE PRACTICAL CONCISE INFORMATION FOR ALL ENGINEERS AND OPERATORS.

***PART 1*—PUMPS—850 Pages:** All types—Centrifugal—Rotary—Reciprocating Pumps: Their Theory, Construction, Operation and Calculations. Air and Vacuum Chambers—Power Pumps—Air Pumps—Jet Condensers—Surface Condensers—Condenser Auxiliaries—Condenser Operation—Calculations—Cooling Ponds—Cooling Towers—Water Supply—Hydraulic Rams—Special Service Pumps—Automotive Fire Pumps—Dredges—Codes. 942 Illustrations.

***PART 2*—HYDRAULICS—320 Pages:** Hydraulic Physics—Drives—Machine Control—Accumulators—Elevators—Hydraulic Airplane Control—Automobile Brakes—Shock Absorbers—Presses—Turbines. Many new uses explained. 310 Illustrations.

***PART 3*—AIR COMPRESSORS—406 Pages:** Compression of Air—Compressor Classification—Parts, Types—Inter and After Coolers—Regulating Devices—Installation—Lubrication—Operation—Maintenance—Blowers—Super-Chargers—Pneumatic Hand Tools—Ready Reference Index and Tables. 402 Illustrations.

Free Examination

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Send postpaid AUDELS PUMPS, HYDRAULICS, AIR COMPRESSORS ($4). If I decide to keep it, I will send you $1 within 7 days; then remit $1 monthly until purchase price of $4 is paid. Otherwise, I will return it promptly.

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Address.....

Occupation.....

Employed by.....P14

catalog bulletin about the part played by austenitic manganese steel in the operation of dredges of all types. Part of the bulletin portrays the romantic history of a half century of colorful placer dredging. Exhaustive discussions of parts subjected to wear such as buckets, bushings, tumblers, screen plates, etc., are accompanied by photographs of dredges in many parts of the world. Includes material on pumps for suction dredges, pipeline fittings, sheaves, gears, and rollers.

Where to Get: Amsco, Chicago Heights, Illinois. (Free)

TO ADVERTISE: All advertising in this section is payable in advance. Rate: 60c per line, or $7.20 per inch of 12 lines. Minimum charge $2.40. No discounts; no commissions. If no change in copy is desired, three continuous insertions are offered for the price of two. Read these instructions carefully. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Count your own copy to save delay. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January issue closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

FOR SALE

One Model 78-C Standard Railroad Shovel with 3½ cu. yd. dipper, condition excellent.
Box 3074

TWO 50-B STEAM SHOVELS, CATERPILLAR TRACTION, 30 FOOT BOOM, 19 FOOT HANDLE, 1½ YARD DIPPER.
Both machines are in good working condition. For further information write or phone to—

CENTRAL IRON LIQUIDATING CO., GILES
P. O. Woodstock, Ala.
Tel. Giles No. 1

Model 5161 Electric Shovel, 45' boom, 29'-6" handle, 4 yard dipper, caterpillar mounting, 2300 volt, 3 phase, 60 cycle. Location Middle West. Available now. Box 3081

DRAGLINE BUCKET FOR SALE

Bucyrus-Erie 3 cu. yd. Type AY heavy duty dragline bucket complete, almost new, $1500.
Box 626 Emporia, Kansas

Welding and Cutting Outfits, Torches, Regulators and Gauges, for heavy, medium and light welding and cutting. Superior Oxy-Acetylene Machine Co., Hamilton, Ohio.

FOR SALE

Two 6-cu. yd. AY dragline buckets. Used but short time. In excellent condition and ready for immediate use. Located in Southwest.
Box 3080

FOR SALE

Crusher, portable Jefferys Hammermill model 20x30 type A serial No. 1520, 1938 Hercules engine type O No. 25469 35 HP mtd. on solid rubbered trailer $1400.00

RIDGE COAL CO.
Sugarcreek, Ohio

FOR SALE
DRAGLINE BUCKET

1—1¼ cu. yd. Type AY Heavy Duty Dragline Bucket.

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin

Electrical equipment for Bucyrus-Erie 10-B consisting of 220 Volt, 60 cycle, 3 phase, 20 h.p. motor, control equipment and approximately 400' of power cable priced to sell.
Box 3079

Cletrac tractor Model D.D. with Heil bulldozer H.T. 60 with Hercules Diesel motor; one Cat. R-4 tractor with bulldozer, semi-diesel with Hyster winch; one Cat. diesel Motor Patrol No. 11; one 8-yd. Austin-Western carryall; one drum Jaeger hoist with 4 cyl. Hercules engine; parts for No. 10 Caterpillar gas patrol; large stock of tractor parts for A.C.; Cletracs, International & Caterpillar; also four G.M.C. diesel motors No. 671; also bulldozer blades of all kinds.
Write Sam, 897 Adamson St., S.W., Atlanta, Ga.

All steel 110' riveted drag boom. 1—35' dragline boom.
Box 3077

3 Million tons No. 7 strip coal available. Average 40' overburden, 5' coal. Truck and rail loading sites ideal.
Alex Kedas Westville, Ill.

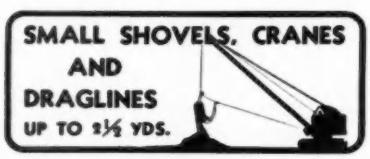
SURPLUS DIPPERS FOR BUCYRUS-ERIE SHOVELS

2—⅜ cu. yd. Skimmer Scoop Dipper—10-B.
2—½ cu. yd. Drag Shovel Dipper—17-B.
3—½ cu. yd. Skimmer Scoop Dipper—17-B.
1—¾ cu. yd. Welded Dipper—21-B.
1—1 cu. yd. Drag Shovel Dipper—29-B.
1—1¼ cu. yd. Cast Front Dipper—GA-3.
1—1¼ cu. yd. Drag Shovel Dipper—33-B.
1—1½ cu. yd. Heavy Duty All Cast Dipper—42-B.
1—1½ cu. yd. Snow Loading Dipper—10-B.
1—2 cu. yd. Rock Dipper—75-B.
1—2¼ cu. yd. Inserted Type Dipper—50-B.
1—2¼ cu. yd. Inserted Type—55-B.
1—2½ cu. yd. All Cast Dipper—55-B.
1—2¾ cu. yd. Light Duty Shovel Dipper—54-B.
1—3½ cu. yd. Coal Loading Dipper—75-B.
1—4 cu. yd. Type 1V Medium Duty Dipper—100-B.

F.O.B. Works

Write for any further information desired.

BUCYRUS-ERIE COMPANY
Parts Department
South Milwaukee Wisconsin



FOR SALE

Marion Type 471 Shovel-Dragline No. 6876, with 25'6" boom, 16'9" handle, 1¾ cu. yd. cast front manganese dipper; 33" wide treads; power boom hoist; electric lights; powered with Waukesha 7x7 engine driving a generator set. The machine is an oil-electric with General Electric hoist, swing and crowd motors. Dragline equipment consists of 65' boom, fairlead, high gantry, lagging, extra ballast (11600 lbs.) and Bucyrus-Erie 1¾ yd. "AY" dragbucket with cast wearing shoes. Box 3076

Marion Model 37 Electric Shovel for operation on 440 volts, 3 phase, 60 cycle AC; 1¾ yard capacity; located Indiana.
Box 3071

Several 50-B steam shovels, 1½ yard dipper, good condition, location Middle West.
Box 3072

FOR SALE

Marion Type 37 electric shovel-dragline combination. 1½ yd. buckets.

A. W. NEVERS
Mt. Pleasant, Iowa

WANTED

1½-yd. gas or diesel shovel-dragline.
Box 3082

One K-12 Insley shovel-crane combination or 15-B Bucyrus-Erie. Must be late model.

CONTRACTORS EQUIPMENT COMPANY
1340-42 Lynn St.
Parkersburg, W. Va.

WANTED

90 to 100' dragline boom.
Box 3078

WANTED

Dragline attachment suitable for Type GA-2 shovel shop No. 3675, must be complete including 40 or 45' boom, forward drum and gearing, fairlead and control mechanism but not including cable.

TOM B. CLEAGE
306 Ewing Avenue
Kansas City, Missouri

HELP WANTED

WANTED

INDUSTRIAL SAND PLANT SUPT. Give birth date, schooling, experience, salary expected.
Box No. 9235

WANTED

MAINTENANCE MAN. Steady Work. Good postwar opportunities. Write full experience with engines, motors, diesels, shovels, tractors, etc. to Box No. 9234.

POSITIONS WANTED

ALL-AROUND OPERATOR

Can operate any kind of shovel, dragline, crane or clamshell—steam, diesel, gas or electric. Can do own repair work. Experienced in quarry, ore and coal stripping. Prefer quarry or coal stripping. Familiar with grading work. Will go anywhere. Have release.
Box 9236

SHOVEL MECHANIC

Experienced mechanic. Worked as foreman on field repairs for 120-B Bucyrus-Erie electric shovels and Bucyrus-Erie electric blast hole drills, Diesel engine experience in maintenance of power plant. Prefer work on Bucyrus-Erie electric shovels. Age 51; good health; two dependents; can furnish references.
Box 9237